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SEQUENCE LISTING

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Doran, Tim
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<120> NOVEL POLYNUCLEOTIDES AND POLYPEPTIDES IN PATHOGENIC
MYCOBACTERIA AND THEIR USE AS DIAGNOSTICS, VACCINES AND
TARGETS FOR CHEMOTHERAPY

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<140> 09/091,538
<141> 1998-06-19

<150> PCT/GB96/03221
<151> 1996-12-23

<150> GB 9526178.0
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 Ile Asp Leu Gly Leu Ile Asp Ile Asp Thr Asp Asp Ile Val Ala Ala
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 35 40 45

Val Gly Thr Ala Met Lys Met Thr Ser Ala Cys Ser Ile Pro Arg Cys
 50 55 60

Arg Ser Val Val Lys Ser Ile Ser Pro Phe Ser Arg Phe Leu Ala Ile
 65 70 75 80

Asn Ser Gln Pro Gly Leu Glu Asn Arg Asp Thr Ala Cys Glu Glu Gln
 85 90 95

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Leu Glu Leu Lys Ser Thr Val Glu Ser Val Arg Ala Gln Arg Tyr	
20 25 30	
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Gly Gly Arg Ile Glu His Ile Val Ile Asp Gly Gly Ser Gly Asp Ala	
35 40 45	
gtc gtg gag tat ctg tcc ggc gat cct ggc ttt gca tat tgg caa tct	192
Val Val Glu Tyr Leu Ser Gly Asp Pro Gly Phe Ala Tyr Trp Gln Ser	
50 55 60	
cag ccc gac aac ggg aga tat gac gcg atg aat cag ggc att gcc cat	240
Gln Pro Asp Asn Gly Arg Tyr Asp Ala Met Asn Gln Gly Ile Ala His	
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Ser Ser Gly Asp Leu Leu Trp Phe Met His Ser Thr Asp Arg Phe Ser	
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Asp Pro Asp Ala Val Ala Ser Val Val Glu Ala Leu Ser Gly His Gly	
100 105 110	
cca gta cgt gat ttg tgg ggt tac ggg aaa aac aac ctt gtc gga ctc	384
Pro Val Arg Asp Leu Trp Gly Tyr Gly Lys Asn Asn Leu Val Gly Leu	
115 120 125	
gac ggc aaa cca ctt ttc cct cgg ccg tac ggc tat atg ccg ttt aag	432
Asp Gly Lys Pro Leu Phe Pro Arg Pro Tyr Gly Tyr Met Pro Phe Lys	
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Phe Gly Ala Ser Leu Val Ala Lys Leu Gly Gly Tyr Asp Leu Asp Phe	
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Gly Leu Glu Ala Asp Gln Leu Phe Ile Tyr Arg Ala Ala Leu Ile Arg	
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cct ccc gtc acg atc gac cgc gtg gtt tgc gac ttc gat gtc acg gga	624
Pro Pro Val Thr Ile Asp Arg Val Val Cys Asp Phe Asp Val Thr Gly	
195 200 205	
cct ggt tca acc cag ccc atc cgt gag cac tat cgg acc ctg cgg cgg	672
Pro Gly Ser Thr Gln Pro Ile Arg Glu His Tyr Arg Thr Leu Arg Arg	
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Leu Trp Asp Leu His Gly Asp Tyr Pro Leu Gly Gly Arg Arg Val Ser	
225 230 235 240	
tgg gct tac ttg cgt gtg aag gag tac ttg att cgg gcc gac ctg gcc	768
Trp Ala Tyr Leu Arg Val Lys Glu Tyr Leu Ile Arg Ala Asp Leu Ala	
245 250 255	

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Ala Phe Asn Ala Val Lys Phe Leu Arg Ala Lys Phe Ala Arg Ala Ser																																																																																																													
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Leu Glu Gly Leu Lys Ser Thr Val Glu Ser Val Arg Ala Gln Arg Tyr																																																																																																													
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Gly Gly Arg Ile Glu His Ile Val Ile Asp Gly Gly Ser Gly Asp Ala																																																																																																													
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Val Val Glu Tyr Leu Ser Gly Asp Pro Gly Phe Ala Tyr Trp Gln Ser																																																																																																													
50	55	60		Gln Pro Asp Asn Gly Arg Tyr Asp Ala Met Asn Gln Gly Ile Ala His		65	70	75	80	Ser Ser Gly Asp Leu Leu Trp Phe Met His Ser Thr Asp Arg Phe Ser		85	90	95		Asp Pro Asp Ala Val Ala Ser Val Val Glu Ala Leu Ser Gly His Gly		100	105	110		Pro Val Arg Asp Leu Trp Gly Tyr Gly Lys Asn Asn Leu Val Gly Leu		115	120	125		Asp Gly Lys Pro Leu Phe Pro Arg Pro Tyr Gly Tyr Met Pro Phe Lys		130	135	140		Met Arg Lys Phe Leu Leu Gly Ala Thr Val Ala His Gln Ala Thr Phe		145	150	155	160	Phe Gly Ala Ser Leu Val Ala Lys Leu Gly Gly Tyr Asp Leu Asp Phe		165	170	175		Gly Leu Glu Ala Asp Gln Leu Phe Ile Tyr Arg Ala Ala Leu Ile Arg		180	185	190		Pro Pro Val Thr Ile Asp Arg Val Val Cys Asp Phe Asp Val Thr Gly		195	200	205		Pro Gly Ser Thr Gln Pro Ile Arg Glu His Tyr Arg Thr Leu Arg Arg		210	215	220		Leu Trp Asp Leu His Gly Asp Tyr Pro Leu Gly Gly Arg Arg Val Ser		225	230	235	240																																								
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Gln Pro Asp Asn Gly Arg Tyr Asp Ala Met Asn Gln Gly Ile Ala His																																																																																																													
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Leu Trp Asp Leu His Gly Asp Tyr Pro Leu Gly Gly Arg Arg Val Ser																																																																																																													
225	230	235	240																																																																																																										
235	240																																																																																																												

Trp Ala Tyr Leu Arg Val Lys Glu Tyr Leu Ile Arg Ala Asp Leu Ala
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Arg Lys Gln Asn Ser
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 Leu Ala Glu Leu Leu Ser Lys Gly Tyr Glu Val His Gly Leu Val
 20 25 30

cgt cga gct tcg acg ttt aac acg tcg cgg atc gat cac ctc tac gtt 144
 Arg Arg Ala Ser Thr Phe Asn Thr Ser Arg Ile Asp His Leu Tyr Val
 35 40 45

gac cca cac caa ccg ggc gcg cgc ttg ttc ttg cac tat gca gac ctc 192
 Asp Pro His Gln Pro Gly Ala Arg Leu Phe Leu His Tyr Ala Asp Leu
 50 55 60

act gac ggc acc ccg ttg gtg acc ctg ctc agc agt atc gac ccg gat 240
 Thr Asp Gly Thr Arg Leu Val Thr Leu Leu Ser Ser Ile Asp Pro Asp
 65 70 75 80

gag gtc tac aac ctc gca gcg cag tcc cat gtg cgc gtc agc ttt gac 288
 Glu Val Tyr Asn Leu Ala Ala Gln Ser His Val Arg Val Ser Phe Asp
 85 90 95

gag cca gtg cat acc gga gac acc acc ggc atg gga tcg atc cga ctt 336
 Glu Pro Val His Thr Gly Asp Thr Thr Gly Met Gly Ser Ile Arg Leu
 100 105 110

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 Leu Glu Ala Val Arg Leu Ser Arg Val Asp Cys Arg Phe Tyr Gln Ala
 115 120 125

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 Ser Ser Ser Glu Met Phe Gly Ala Ser Pro Pro Pro Gln Asn Glu Ser
 130 135 140

acg ccg ttc tat ccc cgt tcg cca tac ggc gcg gcc aag gtc ttc tcg 480
 Thr Pro Phe Tyr Pro Arg Ser Pro Tyr Gly Ala Ala Lys Val Phe Ser
 145 150 155 160

tac tgg acg act cgc aac tat cga gag gcg tac gga tta ttc gca gtg	528
Tyr Trp Thr Thr Arg Asn Tyr Arg Glu Ala Tyr Gly Leu Phe Ala Val	
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aat ggc atc ttg ttc aac cat gag tcc ccc cgg cgc ggc gag act ttc	576
Asn Gly Ile Leu Phe Asn His Glu Ser Pro Arg Arg Gly Glu Thr Phe	
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gtg acc cga aag atc acg cgt gcc gtg gcg cgc atc cga gct ggc gtc	624
Val Thr Arg Lys Ile Thr Arg Ala Val Ala Arg Ile Arg Ala Gly Val	
195 200 205	
caa tcg gag gtc tat atg ggc aac ctc gat gcg atc cgc gac tgg ggc	672
Gln Ser Glu Val Tyr Met Gly Asn Leu Asp Ala Ile Arg Asp Trp Gly	
210 215 220	
tac gcg ccc gaa tat gtc gag ggg atg tgg agg atg ttg caa gcg cct	720
Tyr Ala Pro Glu Tyr Val Glu Gly Met Trp Arg Met Leu Gln Ala Pro	
225 230 235 240	
gaa cct gat gac tac gtc ctg gcg aca ggg cgt ggt tac acc gta cgt	768
Glu Pro Asp Asp Tyr Val Leu Ala Thr Gly Arg Gly Tyr Thr Val Arg	
245 250 255	
gag ttc gct caa gct gct ttt gac cat gtc ggg ctc gac tgg caa aag	816
Glu Phe Ala Gln Ala Ala Phe Asp His Val Gly Leu Asp Trp Gln Lys	
260 265 270	
cgc gtc aag ttt gac gac cgc tat ttg cgt ccc acc gag gtc gat tcg	864
Arg Val Lys Phe Asp Asp Arg Tyr Leu Arg Pro Thr Glu Val Asp Ser	
275 280 285	
cta gta gga gat gcc gac aag gcg gcc cag tca ctc ggc tgg aaa gct	912
Leu Val Gly Asp Ala Asp Lys Ala Ala Gln Ser Leu Gly Trp Lys Ala	
290 295 300	
tcg gtt cat act ggt gaa ctc gcg cgc atc atg gtg gac gcg gac atc	960
Ser Val His Thr Gly Glu Leu Ala Arg Ile Met Val Asp Ala Asp Ile	
305 310 315 320	
gcc gcg ttg gag tgc gat ggc aca cca tgg atc gac acg ccg atg ttg	1008
Ala Ala Leu Glu Cys Asp Gly Thr Pro Trp Ile Asp Thr Pro Met Leu	
325 330 335	
cct ggt tgg ggc aga gta agt tga	1032
Pro Gly Trp Gly Arg Val Ser	
340	

<210> 10
 <211> 343
 <212> PRT
 <213> Mycobacterium

<400> 10
 Val Lys Arg Ala Leu Ile Thr Gly Ile Thr Gly Gln Asp Gly Ser Tyr
 1 5 10 15
 Leu Ala Glu Leu Leu Ser Lys Gly Tyr Glu Val His Gly Leu Val
 20 25 30

Arg Arg Ala Ser Thr Phe Asn Thr Ser Arg Ile Asp His Leu Tyr Val
 35 40 45

Asp Pro His Gln Pro Gly Ala Arg Leu Phe Leu His Tyr Ala Asp Leu
 50 55 60

Thr Asp Gly Thr Arg Leu Val Thr Leu Leu Ser Ser Ile Asp Pro Asp
 65 70 75 80

Glu Val Tyr Asn Leu Ala Ala Gln Ser His Val Arg Val Ser Phe Asp
 85 90 95

Glu Pro Val His Thr Gly Asp Thr Thr Gly Met Gly Ser Ile Arg Leu
 100 105 110

Leu Glu Ala Val Arg Leu Ser Arg Val Asp Cys Arg Phe Tyr Gln Ala
 115 120 125

Ser Ser Ser Glu Met Phe Gly Ala Ser Pro Pro Pro Gln Asn Glu Ser
 130 135 140

Thr Pro Phe Tyr Pro Arg Ser Pro Tyr Gly Ala Ala Lys Val Phe Ser
 145 150 155 160

Tyr Trp Thr Thr Arg Asn Tyr Arg Glu Ala Tyr Gly Leu Phe Ala Val
 165 170 175

Asn Gly Ile Leu Phe Asn His Glu Ser Pro Arg Arg Gly Glu Thr Phe
 180 185 190

Val Thr Arg Lys Ile Thr Arg Ala Val Ala Arg Ile Arg Ala Gly Val
 195 200 205

Gln Ser Glu Val Tyr Met Gly Asn Leu Asp Ala Ile Arg Asp Trp Gly
 210 215 220

Tyr Ala Pro Glu Tyr Val Glu Gly Met Trp Arg Met Leu Gln Ala Pro
 225 230 235 240

Glu Pro Asp Asp Tyr Val Leu Ala Thr Gly Arg Gly Tyr Thr Val Arg
 245 250 255

Glu Phe Ala Gln Ala Ala Phe Asp His Val Gly Leu Asp Trp Gln Lys
 260 265 270

Arg Val Lys Phe Asp Asp Arg Tyr Leu Arg Pro Thr Glu Val Asp Ser
 275 280 285

Leu Val Gly Asp Ala Asp Lys Ala Ala Gln Ser Leu Gly Trp Lys Ala
 290 295 300

Ser Val His Thr Gly Glu Leu Ala Arg Ile Met Val Asp Ala Asp Ile
 305 310 315 320

Ala Ala Leu Glu Cys Asp Gly Thr Pro Trp Ile Asp Thr Pro Met Leu
 325 330 335

Pro Gly Trp Gly Arg Val Ser
 340

<210> 11
 <211> 1032
 <212> DNA
 <213> **Mycobacterium**

<220>
 <221> CDS
 <222> (1)..(1029)

<400> 11

gtg aag cga gcg ctt ata aca ggg atc acg ggg cag gat ggt tcc tac	48
Val Lys Arg Ala Leu Ile Thr Gly Ile Thr Gly Gln Asp Gly Ser Tyr	
1 5 10 15	

ctc gcc gag cta cta ctg agc aag gga tac gag gtt cac ggg ctc gtt	96
Leu Ala Glu Leu Leu Ser Lys Gly Tyr Glu Val His Gly Leu Val	
20 25 30	

cgt cga gct tcg acg ttt aac acg tcg cgg atc gat cac ctc tac gtt	144
Arg Arg Ala Ser Thr Phe Asn Thr Ser Arg Ile Asp His Leu Tyr Val	
35 40 45	

gac cca cac caa ccg ggc gcg cgc ttg ttc ttg cac tat gca gac ctc	192
Asp Pro His Gln Pro Gly Ala Arg Leu Phe Leu His Tyr Ala Asp Leu	
50 55 60	

act gac ggc acc cgg ttg gtg acc ctg ctc acg agt atc gac ccg gat	240
Thr Asp Gly Thr Arg Leu Val Thr Leu Leu Ser Ser Ile Asp Pro Asp	
65 70 75 80	

gag gtc tac aac ctc gca gcg cag tcc cat gtg cgc gtc agc ttt gac	288
Glu Val Tyr Asn Leu Ala Ala Gln Ser His Val Arg Val Ser Phe Asp	
85 90 95	

gag cca gtg cat acc gga gac acc acc ggc atg gga tcg atc cga ctt	336
Glu Pro Val His Thr Gly Asp Thr Thr Gly Met Gly Ser Ile Arg Leu	
100 105 110	

ctg gaa gca gtc cgc ctt tct cgg gtg gac tgc cgg ttc tat cag gct	384
Leu Glu Ala Val Arg Leu Ser Arg Val Asp Cys Arg Phe Tyr Gln Ala	
115 120 125	

tcc tcg tcg gag atg ttc ggc gca tct ccg cca ccg cag aac gaa tcg	432
Ser Ser Ser Glu Met Phe Gly Ala Ser Pro Pro Pro Gln Asn Glu Ser	
130 135 140	

acg ccg ttc tat ccc cgt tcg cca tac ggc gcg gcc aag gtc ttc tcg	480
Thr Pro Phe Tyr Pro Arg Ser Pro Tyr Gly Ala Ala Lys Val Phe Ser	
145 150 155 160	

tac tgg acg act cgc aac tat cga gag gcg tac gga tta ttc gca gtg	528
Tyr Trp Thr Thr Arg Asn Tyr Arg Glu Ala Tyr Gly Leu Phe Ala Val	
165 170 175	

aat ggc atc ttg ttc aac cat gag tcc ccc ccg cgc ggc gag act ttc	576
Asn Gly Ile Leu Phe Asn His Glu Ser Pro Arg Arg Gly Glu Thr Phe	
180 185 190	

gtg acc cga aag atc acg cgt gcc gtg gcg cgc atc cga gct ggc gtc	624
Val Thr Arg Lys Ile Thr Arg Ala Val Ala Arg Ile Arg Ala Gly Val	
195 200 205	

caa tcg gag gtc tat atg ggc aac ctc gat gcg atc cgc gac tgg ggc	672
Gln Ser Glu Val Tyr Met Gly Asn Leu Asp Ala Ile Arg Asp Trp Gly	
210 215 220	
tac gcg ccc gaa tat gtc gag ggg atg tgg agg atg ttg caa gcg cct	720
Tyr Ala Pro Glu Tyr Val Glu Gly Met Trp Arg Met Leu Gln Ala Pro	
225 230 235 240	
gaa cct gat gac tac gtc ctg gcg aca ggg cgt ggt tac acc gta cgt	768
Glu Pro Asp Asp Tyr Val Leu Ala Thr Gly Arg Gly Tyr Thr Val Arg	
245 250 255	
gag ttc gct caa gct gct ttt gac cac gtc ggg ctc gac tgg caa aag	816
Glu Phe Ala Gln Ala Ala Phe Asp His Val Gly Leu Asp Trp Gln Lys	
260 265 270	
cac gtc aag ttt gac gac cgc tat ttg cgc ccc acc gag gtc gat tcg	864
His Val Lys Phe Asp Asp Arg Tyr Leu Arg Pro Thr Glu Val Asp Ser	
275 280 285	
cta gta gga gat gcc gac agg gcg gcc cag tca ctc ggc tgg aaa gct	912
Leu Val Gly Asp Ala Asp Arg Ala Ala Gln Ser Leu Gly Trp Lys Ala	
290 295 300	
tcg gtt cat act ggt gaa ctc gcg cgc atc atg gtg gac gcg gac atc	960
Ser Val His Thr Gly Glu Leu Ala Arg Ile Met Val Asp Ala Asp Ile	
305 310 315 320	
gcc gcg tcg gag tgc gat ggc aca cca tgg atc gac acg ccg atg ttg	1008
Ala Ala Ser Glu Cys Asp Gly Thr Pro Trp Ile Asp Thr Pro Met Leu	
325 330 335	
cct ggt tgg ggc gga gta agt tga	1032
Pro Gly Trp Gly Gly Val Ser	
340	

<210> 12
 <211> 343
 <212> PRT
 <213> Mycobacterium

Val Lys Arg Ala Leu Ile Thr Gly Ile Thr Gly Gln Asp Gly Ser Tyr	
1 5 10 15	
Leu Ala Glu Leu Leu Ser Lys Gly Tyr Glu Val His Gly Leu Val	
20 25 30	
Arg Arg Ala Ser Thr Phe Asn Thr Ser Arg Ile Asp His Leu Tyr Val	
35 40 45	
Asp Pro His Gln Pro Gly Ala Arg Leu Phe Leu His Tyr Ala Asp Leu	
50 55 60	
Thr Asp Gly Thr Arg Leu Val Thr Leu Leu Ser Ser Ile Asp Pro Asp	
65 70 75 80	
Glu Val Tyr Asn Leu Ala Ala Gln Ser His Val Arg Val Ser Phe Asp	
85 90 95	

Glu Pro Val His Thr Gly Asp Thr Thr Gly Met Gly Ser Ile Arg Leu
 100 105 110

Leu Glu Ala Val Arg Leu Ser Arg Val Asp Cys Arg Phe Tyr Gln Ala
 115 120 125

Ser Ser Ser Glu Met Phe Gly Ala Ser Pro Pro Pro Gln Asn Glu Ser
 130 135 140

Thr Pro Phe Tyr Pro Arg Ser Pro Tyr Gly Ala Ala Lys Val Phe Ser
 145 150 155 160

Tyr Trp Thr Thr Arg Asn Tyr Arg Glu Ala Tyr Gly Leu Phe Ala Val
 165 170 175

Asn Gly Ile Leu Phe Asn His Glu Ser Pro Arg Arg Gly Glu Thr Phe
 180 185 190

Val Thr Arg Lys Ile Thr Arg Ala Val Ala Arg Ile Arg Ala Gly Val
 195 200 205

Gln Ser Glu Val Tyr Met Gly Asn Leu Asp Ala Ile Arg Asp Trp Gly
 210 215 220

Tyr Ala Pro Glu Tyr Val Glu Gly Met Trp Arg Met Leu Gln Ala Pro
 225 230 235 240

Glu Pro Asp Asp Tyr Val Leu Ala Thr Gly Arg Gly Tyr Thr Val Arg
 245 250 255

Glu Phe Ala Gln Ala Ala Phe Asp His Val Gly Leu Asp Trp Gln Lys
 260 265 270

His Val Lys Phe Asp Asp Arg Tyr Leu Arg Pro Thr Glu Val Asp Ser
 275 280 285

Leu Val Gly Asp Ala Asp Arg Ala Ala Gln Ser Leu Gly Trp Lys Ala
 290 295 300

Ser Val His Thr Gly Glu Leu Ala Arg Ile Met Val Asp Ala Asp Ile
 305 310 315 320

Ala Ala Ser Glu Cys Asp Gly Thr Pro Trp Ile Asp Thr Pro Met Leu
 325 330 335

Pro Gly Trp Gly Gly Val Ser
 340

<210> 13
 <211> 1020
 <212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)...(1017)

<400> 13

gtg cga tgg cac acc atg gat cga cac gcc gat gtt gcc tgg ttg ggg	48
Val Arg Trp His Thr Met Asp Arg His Ala Asp Val Ala Trp Leu Gly	
1 5 10 15	
cag agt aag ttg acg act aca cct ggg cct ctg gac cgc gca acg ccc	96
Gln Ser Lys Leu Thr Thr Pro Gly Pro Leu Asp Arg Ala Thr Pro	
20 25 30	
gtg tat atc gcc ggt cat cgg ggg ctg gtc ggc tca gcg ctc gta cgt	144
Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg	
35 40 45	
aga ttt gag gcc gag ggg ttc acc aat ctc att gtg cga tca cgc gat	192
Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp	
50 55 60	
gag att gat ctg acg gac cga gca acg ttt gat ttt gtg tct gag	240
Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu	
65 70 75 80	
aca aga cca cag gtg atc atc gat gcg gcc gca cgg gtc ggc ggc atc	288
Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Arg Val Gly Gly Ile	
85 90 95	
atg gcg aat aac acc tat ccc gcg gac ttc ttg tcc gaa aac ctc cga	336
Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg	
100 105 110	
atc ca ^g acc aat ttg ctc gac gca gct gtc gcc gtg cgt gtg ccg cgg	384
Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg	
115 120 125	
ctc ctt ttc ctc ggt tcg tca tgc atc tac ccg aag tac gct ccg caa	432
Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln	
130 135 140	
cct atc cac gag agt gct tta ttg act ggc cct ttg gag ccc acc aac	480
Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn	
145 150 155 160	
gac gcg tat gcg atc gcc aag atc gcc ggt atc ctg caa gtt cag gcg	528
Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala	
165 170 175	
gtt agg cgc caa tat ggg ctg gcg tgg atc tct gcg atg ccg act aac	576
Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn	
180 185 190	
ctc tac gga ccc ggc gac aac ttc tcc ccg tcc ggg tcg cat ctc ttg	624
Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu	
195 200 205	
ccg gcg ctc atc cgt cga tat gag gaa gcc aaa gct ggt ggt gca gaa	672
Pro Ala Leu Ile Arg Arg Tyr Glu Glu Ala Lys Ala Gly Gly Ala Glu	
210 215 220	
gag gtg acg aat tgg ggg acc ggt act ccg cgg cgc gaa ctt ctg cat	720
Glu Val Thr Asn Trp Gly Thr Gly Thr Pro Arg Arg Glu Leu Leu His	
225 230 235 240	

gtc gac gat ctg gcg agc gca tgc ctg ttc ctt ttg gaa cat ttc gat	768		
Val Asp Asp Leu Ala Ser Ala Cys Leu Phe Leu Leu Glu His Phe Asp			
245	250	255	
ggt ccg aac cac gtc aac gtg ggc acc ggc gtc gat cac agc att agc	816		
Gly Pro Asn His Val Asn Val Gly Thr Gly Val Asp His Ser Ile Ser			
260	265	270	
gag atc gca gac atg gtc gct aca gcg gtg ggc tac atc ggc gaa aca	864		
Glu Ile Ala Asp Met Val Ala Thr Ala Val Gly Tyr Ile Gly Glu Thr			
275	280	285	
cgt tgg gat cca act aaa ccc gat gga acc ccg cgc aaa cta ttg gac	912		
Arg Trp Asp Pro Thr Lys Pro Asp Gly Thr Pro Arg Lys Leu Leu Asp			
290	295	300	
gtc tcc gcg cta cgc gag ttg ggt tgg cgc ccg cga atc gca ctg aaa	960		
Val Ser Ala Leu Arg Glu Leu Gly Trp Arg Pro Arg Ile Ala Leu Lys			
305	310	315	320
gac ggc atc gat gca acg gtg tcg tgg tac cgc aca aat gcc gat gcc	1008		
Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala			
325	330	335	
gtg agg agg taa	1020		
Val Arg Arg			

<210> 14
 <211> 339
 <212> PRT
 <213> Mycobacterium

<400> 14			
Val Arg Trp His Thr Met Asp Arg His Ala Asp Val Ala Trp Leu Gly			
1	5	10	15

Gln Ser Lys Leu Thr Thr Pro Gly Pro Leu Asp Arg Ala Thr Pro		
20	25	30

Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg		
35	40	45

Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp		
50	55	60

Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu			
65	70	75	80

Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		
85	90	95

Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		
100	105	110

Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		
115	120	125

Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		
130	135	140

Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn
 145 150 155 160
 Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala
 165 170 175
 Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn
 180 185 190
 Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu
 195 200 205
 Pro Ala Leu Ile Arg Arg Tyr Glu Glu Ala Lys Ala Gly Gly Ala Glu
 210 215 220
 Glu Val Thr Asn Trp Gly Thr Gly Thr Pro Arg Arg Glu Leu Leu His
 225 230 235 240
 Val Asp Asp Leu Ala Ser Ala Cys Leu Phe Leu Leu Glu His Phe Asp
 245 250 255
 Gly Pro Asn His Val Asn Val Gly Thr Gly Val Asp His Ser Ile Ser
 260 265 270
 Glu Ile Ala Asp Met Val Ala Thr Ala Val Gly Tyr Ile Gly Glu Thr
 275 280 285
 Arg Trp Asp Pro Thr Lys Pro Asp Gly Thr Pro Arg Lys Leu Leu Asp
 290 295 300
 Val Ser Ala Leu Arg Glu Leu Gly Trp Arg Pro Arg Ile Ala Leu Lys
 305 310 315 320
 Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala
 325 330 335
 Val Arg Arg

<210> 15
 <211> 1020
 <212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)..(1017)

<400> 15
 gtg cga tgg cac acc atg gat cga cac gcc gat gtt gcc tgg ttg ggg 48
 Val Arg Trp His Thr Met Asp Arg His Ala Asp Val Ala Trp Leu Gly
 1 5 10 15
 cgg agt aag ttg acg act aca cct ggg cct ctg gac cgc gca acg ccc 96
 Arg Ser Lys Leu Thr Thr Pro Gly Pro Leu Asp Arg Ala Thr Pro
 20 25 30
 gtg tat atc gcc ggt cat cgg ggg ctg gtc ggc tca gcg ctc gta cgt 144
 Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg
 35 40 45

aga ttt gag gcc gag ggg ttc acc aat ctc att gtg cga tca cgc gat	192
Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp	
50 55 60	
gag att gat ctg acg gac cga gcc gca acg ttt gat ttt gtg tct gag	240
Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu	
65 70 75 80	
aca aga cca cag gtg atc atc gat gcg gcc gca cgg gtc ggc ggc atc	288
Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Arg Val Gly Gly Ile	
85 90 95	
atg gcg aat aac acc tat ccc gcg gac ttc ttg tcc gaa aac ctc cga	336
Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg	
100 105 110	
atc cag acc aat ttg ctc gac gca gct gtc gcc gtg cgt gtg ccg ccg	384
Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg	
115 120 125	
ctc ctt ttc ctc ggt tcg tca tgc atc tac ccg aag tac gct ccg caa	432
Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln	
130 135 140	
cct atc cac gag agt gct tta ttg act ggc cct ttg gag ccc acc aac	480
Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn	
145 150 155 160	
gac gcg tat gcg atc gcc aag atc gcc ggt atc ctg caa gtt cag gcg	528
Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala	
165 170 175	
gtt agg cgc caa tat ggg ctg gcg tgg atc tct gcg atg ccg act aac	576
Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn	
180 185 190	
ctc tac gga ccc ggc gac aac ttc tcc ccg tcc ggg tcg cat ctc ttg	624
Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu	
195 200 205	
ccg gcg ctc atc cgt cga tat gag gaa gcc aaa gct ggt ggt gca gaa	672
Pro Ala Leu Ile Arg Arg Tyr Glu Glu Ala Lys Ala Gly Gly Ala Glu	
210 215 220	
gag gtg acg aat tgg ggg acc ggt act ccg cgg cgc gaa ctt ctg cat	720
Glu Val Thr Asn Trp Gly Thr Gly Thr Pro Arg Arg Glu Leu Leu His	
225 230 235 240	
gtc gac gat ctg gcg agc gca tgc ctg ttc ctt ttg gaa cat ttc gat	768
Val Asp Asp Leu Ala Ser Ala Cys Leu Phe Leu Leu Glu His Phe Asp	
245 250 255	
ggt ccg aac cac gtc aac gtg ggc acc ggc gtc gat cac agc att agc	816
Gly Pro Asn His Val Asn Val Gly Thr Gly Val Asp His Ser Ile Ser	
260 265 270	
gag atc gca gac atg gtc gct acg gcg gtg ggc tac atc ggc gaa aca	864
Glu Ile Ala Asp Met Val Ala Thr Ala Val Gly Tyr Ile Gly Glu Thr	
275 280 285	

cgt tgg gat cca act aaa ccc gat gga acc ccg cgc aaa cta ttg gac	912																								
Arg Trp Asp Pro Thr Lys Pro Asp Gly Thr Pro Arg Lys Leu Leu Asp																									
290	295		300	gtc tcc gcg cta cgc gag ttg ggt tgg cgc ccg cga atc gca ctg aaa	960	Val Ser Ala Leu Arg Glu Leu Gly Trp Arg Pro Arg Ile Ala Leu Lys		305	310		315		320	gac ggc atc gat gca acg gtg tcg tgg tac cgc aca aat gcc gat gcc	1008	Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala		325	330		335	gtg agg agg taa	1020	Val Arg Arg	
	300																								
gtc tcc gcg cta cgc gag ttg ggt tgg cgc ccg cga atc gca ctg aaa	960																								
Val Ser Ala Leu Arg Glu Leu Gly Trp Arg Pro Arg Ile Ala Leu Lys																									
305	310		315		320	gac ggc atc gat gca acg gtg tcg tgg tac cgc aca aat gcc gat gcc	1008	Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala		325	330		335	gtg agg agg taa	1020	Val Arg Arg									
	315		320	gac ggc atc gat gca acg gtg tcg tgg tac cgc aca aat gcc gat gcc	1008	Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala		325	330		335	gtg agg agg taa	1020	Val Arg Arg											
	320																								
gac ggc atc gat gca acg gtg tcg tgg tac cgc aca aat gcc gat gcc	1008																								
Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala																									
325	330		335	gtg agg agg taa	1020	Val Arg Arg																			
	335																								
gtg agg agg taa	1020																								
Val Arg Arg																									

<210> 16
 <211> 339
 <212> PRT
 <213> *Mycobacterium*

<400> 16																																																																																	
Val Arg Trp His Thr Met Asp Arg His Ala Asp Val Ala Trp Leu Gly																																																																																	
1	5		10		15	Arg Ser Lys Leu Thr Thr Pro Gly Pro Leu Asp Arg Ala Thr Pro		20	25		30	Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg		35	40		45	Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp		50	55		60	Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu		65	70		75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205
	10		15	Arg Ser Lys Leu Thr Thr Pro Gly Pro Leu Asp Arg Ala Thr Pro		20	25		30	Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg		35	40		45	Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp		50	55		60	Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu		65	70		75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205		
	15																																																																																
Arg Ser Lys Leu Thr Thr Pro Gly Pro Leu Asp Arg Ala Thr Pro																																																																																	
20	25		30	Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg		35	40		45	Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp		50	55		60	Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu		65	70		75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205								
	30																																																																																
Val Tyr Ile Ala Gly His Arg Gly Leu Val Gly Ser Ala Leu Val Arg																																																																																	
35	40		45	Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp		50	55		60	Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu		65	70		75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205														
	45																																																																																
Arg Phe Glu Ala Glu Gly Phe Thr Asn Leu Ile Val Arg Ser Arg Asp																																																																																	
50	55		60	Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu		65	70		75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																				
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Glu Ile Asp Leu Thr Asp Arg Ala Ala Thr Phe Asp Phe Val Ser Glu																																																																																	
65	70		75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																										
	75		80	Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile		85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																												
	80																																																																																
Thr Arg Pro Gln Val Ile Ile Asp Ala Ala Ala Arg Val Gly Gly Ile																																																																																	
85	90		95	Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg		100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																		
	95																																																																																
Met Ala Asn Asn Thr Tyr Pro Ala Asp Phe Leu Ser Glu Asn Leu Arg																																																																																	
100	105		110	Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg		115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																								
	110																																																																																
Ile Gln Thr Asn Leu Leu Asp Ala Ala Val Ala Val Arg Val Pro Arg																																																																																	
115	120		125	Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln		130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																														
	125																																																																																
Leu Leu Phe Leu Gly Ser Ser Cys Ile Tyr Pro Lys Tyr Ala Pro Gln																																																																																	
130	135		140	Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn		145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																																				
	140																																																																																
Pro Ile His Glu Ser Ala Leu Leu Thr Gly Pro Leu Glu Pro Thr Asn																																																																																	
145	150		155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																																										
	155		160	Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala		165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																																												
	160																																																																																
Asp Ala Tyr Ala Ile Ala Lys Ile Ala Gly Ile Leu Gln Val Gln Ala																																																																																	
165	170		175	Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn		180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																																																		
	175																																																																																
Val Arg Arg Gln Tyr Gly Leu Ala Trp Ile Ser Ala Met Pro Thr Asn																																																																																	
180	185		190	Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu		195	200		205																																																																								
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Leu Tyr Gly Pro Gly Asp Asn Phe Ser Pro Ser Gly Ser His Leu Leu																																																																																	
195	200		205																																																																														
	205																																																																																

Pro Ala Leu Ile Arg Arg Tyr Glu Glu Ala Lys Ala Gly Gly Ala Glu
 210 215 220

Glu Val Thr Asn Trp Gly Thr Gly Thr Pro Arg Arg Glu Leu Leu His
 225 230 235 240

Val Asp Asp Leu Ala Ser Ala Cys Leu Phe Leu Leu Glu His Phe Asp
 245 250 255

Gly Pro Asn His Val Asn Val Gly Thr Gly Val Asp His Ser Ile Ser
 260 265 270

Glu Ile Ala Asp Met Val Ala Thr Ala Val Gly Tyr Ile Gly Glu Thr
 275 280 285

Arg Trp Asp Pro Thr Lys Pro Asp Gly Thr Pro Arg Lys Leu Leu Asp
 290 295 300

Val Ser Ala Leu Arg Glu Leu Gly Trp Arg Pro Arg Ile Ala Leu Lys
 305 310 315 320

Asp Gly Ile Asp Ala Thr Val Ser Trp Tyr Arg Thr Asn Ala Asp Ala
 325 330 335

Val Arg Arg

<210> 17
 <211> 723
 <212> DNA
 <213> *Mycobacterium*

<220>
 <221> CDS
 <222> (1)..(720)

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 Met Asp Phe Leu Arg Asn Ala Gly Leu Met Ala Arg Asn Val Ser Thr
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gag atg ctg cgc cac ttc gaa cga aag cgc cta tta gta aac caa ttc 96
 Glu Met Leu Arg His Phe Glu Arg Lys Arg Leu Leu Val Asn Gln Phe
 20 25 30

aaa gca tac gga gtc aac gtt gtt att gat gtc ggt gct aac tcc ggc 144
 Lys Ala Tyr Gly Val Asn Val Val Ile Asp Val Gly Ala Asn Ser Gly
 35 40 45

cag ttc ggt agc gct ttg cgt cgt gca gga ttc aag agc cgt atc gtt 192
 Gln Phe Gly Ser Ala Leu Arg Arg Ala Gly Phe Lys Ser Arg Ile Val
 50 55 60

tcc ttt gaa cct ctt tcg ggg cca ttt gcg caa cta acg cgc aag tcg 240
 Ser Phe Glu Pro Leu Ser Gly Pro Phe Ala Gln Leu Thr Arg Lys Ser
 65 70 75 80

gca tcg gat cca cta tgg gag tgt cac cag tat gcc cta ggc gac gcc 288
 Ala Ser Asp Pro Leu Trp Glu Cys His Gln Tyr Ala Leu Gly Asp Ala
 85 90 95

gat gag acg att acc atc aat gtg gca ggc aat gcg ggg gca agt agt		336	
Asp Glu Thr Ile Thr Ile Asn Val Ala Gly Asn Ala Gly Ala Ser Ser			
100	105	110	
tcc gtg ctg ccg atg ctt aaa agt cat caa gat gcc ttt cct ccc gcg		384	
Ser Val Leu Pro Met Leu Lys Ser His Gln Asp Ala Phe Pro Pro Ala			
115	120	125	
aat tat att ggc acc gaa gac gtt gca ata cac cgc ctt gat tcg gtt		432	
Asn Tyr Ile Gly Thr Glu Asp Val Ala Ile His Arg Leu Asp Ser Val			
130	135	140	
gca tca gaa ttt ctg aac cct acc gat gtt act ttc ctg aag atc gac		480	
Ala Ser Glu Phe Leu Asn Pro Thr Asp Val Thr Phe Leu Lys Ile Asp			
145	150	155	160
gta cag ggt ttc gag aag cag gtt atc acg ggc agt aag tca acg ctt		528	
Val Gln Gly Phe Glu Lys Gln Val Ile Thr Gly Ser Lys Ser Thr Leu			
165	170	175	
aac gaa agc tgc gtc ggc atg caa ctc gaa ctt tct ttt att ccg ttg		576	
Asn Glu Ser Cys Val Gly Met Gln Leu Glu Leu Ser Phe Ile Pro Leu			
180	185	190	
tac gaa ggt gac atg ctg att cat gaa gcg ctt gaa ctt gtc tat tcc		624	
Tyr Glu Gly Asp Met Leu Ile His Glu Ala Leu Glu Leu Val Tyr Ser			
195	200	205	
cta ggt ttc aga ctg acg ggt ttg ttg ccc ggc ttt acg gat ccg cgc		672	
Leu Gly Phe Arg Leu Thr Gly Leu Leu Pro Gly Phe Thr Asp Pro Arg			
210	215	220	
aat ggt cga atg ctt caa gct gac ggc att ttc ttc cgt ggg gac gat		720	
Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg Gly Asp Asp			
225	230	235	240
tga		723	
<210> 18			
<211> 240			
<212> PRT			
<213> Mycobacterium			
<400> 18			
Met Asp Phe Leu Arg Asn Ala Gly Leu Met Ala Arg Asn Val Ser Thr			
1	5	10	15
Glu Met Leu Arg His Phe Glu Arg Lys Arg Leu Leu Val Asn Gln Phe			
20	25	30	
Lys Ala Tyr Gly Val Asn Val Val Ile Asp Val Gly Ala Asn Ser Gly			
35	40	45	
Gln Phe Gly Ser Ala Leu Arg Arg Ala Gly Phe Lys Ser Arg Ile Val			
50	55	60	
Ser Phe Glu Pro Leu Ser Gly Pro Phe Ala Gln Leu Thr Arg Lys Ser			
65	70	75	80

Ala Ser Asp Pro Leu Trp Glu Cys His Gln Tyr Ala Leu Gly Asp Ala
 85 90 95

Asp Glu Thr Ile Thr Ile Asn Val Ala Gly Asn Ala Gly Ala Ser Ser
 100 105 110

Ser Val Leu Pro Met Leu Lys Ser His Gln Asp Ala Phe Pro Pro Ala
 115 120 125

Asn Tyr Ile Gly Thr Glu Asp Val Ala Ile His Arg Leu Asp Ser Val
 130 135 140

Ala Ser Glu Phe Leu Asn Pro Thr Asp Val Thr Phe Leu Lys Ile Asp
 145 150 155 160

Val Gln Gly Phe Glu Lys Gln Val Ile Thr Gly Ser Lys Ser Thr Leu
 165 170 175

Asn Glu Ser Cys Val Gly Met Gln Leu Glu Leu Ser Phe Ile Pro Leu
 180 185 190

Tyr Glu Gly Asp Met Leu Ile His Glu Ala Leu Glu Leu Val Tyr Ser
 195 200 205

Leu Gly Phe Arg Leu Thr Gly Leu Leu Pro Gly Phe Thr Asp Pro Arg
 210 215 220

Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg Gly Asp Asp
 225 230 235 240

<210> 19
 <211> 723
 <212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)..(720)

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 Met Asp Phe Leu Arg Asn Ala Gly Leu Met Ala Arg Asn Val Ser Thr
 1 5 10 15

gag atg ctg cgc cac ttc gaa cga aag cgc cta tta gta aac caa ttc 96
 Glu Met Leu Arg His Phe Glu Arg Lys Arg Leu Leu Val Asn Gln Phe
 20 25 30

aaa gca tac gga gtc aac gtt gtt att gat gtc ggt gct aac tcc ggc 144
 Lys Ala Tyr Gly Val Asn Val Val Ile Asp Val Gly Ala Asn Ser Gly
 35 40 45

cag ttc ggt agc gct ttg cgt cgt gca gga ttc aag agc cgt atc gtt 192
 Gln Phe Gly Ser Ala Leu Arg Arg Ala Gly Phe Lys Ser Arg Ile Val
 50 55 60

tcc ttt gaa cct ctt tcg ggg cca ttt gcg caa cta acg cgc gag tcg 240
 Ser Phe Glu Pro Leu Ser Gly Pro Phe Ala Gln Leu Thr Arg Glu Ser
 65 70 75 80

gca tcg gat cca cta tgg gag tgt cac cag tat gcc cta ggc gac gcc Ala Ser Asp Pro Leu Trp Glu Cys His Gln Tyr Ala Leu Gly Asp Ala 85 90 95	288
gat gag acg att acc atc aat gtg gca ggc aat gcg ggg gca agt agt Asp Glu Thr Ile Thr Ile Asn Val Ala Gly Asn Ala Gly Ala Ser Ser 100 105 110	336
tcc gtg ctg ccg atg ctt aaa agt cat caa gat gcc ttt cct ccc gcg Ser Val Leu Pro Met Leu Lys Ser His Gln Asp Ala Phe Pro Pro Ala 115 120 125	384
aat tat att ggc acc gaa gac gtt gca ata cac cgc ctt gat tcg gtt Asn Tyr Ile Gly Thr Glu Asp Val Ala Ile His Arg Leu Asp Ser Val 130 135 140	432
gca tca gaa ttt ctg aac cct acc gat gtt act ttc ctg aag atc gac Ala Ser Glu Phe Leu Asn Pro Thr Asp Val Thr Phe Leu Lys Ile Asp 145 150 155 160	480
gta cag ggt ttc gag aag cag gtt atc gcg ggc agt aag tca acg ctt Val Gln Gly Phe Glu Lys Gln Val Ile Ala Gly Ser Lys Ser Thr Leu 165 170 175	528
aac gaa agc tgc gtc ggc atg caa ctc gaa ctt tct ttt att ccg ttg Asn Glu Ser Cys Val Gly Met Gln Leu Glu Leu Ser Phe Ile Pro Leu 180 185 190	576
tac gaa ggt gac atg ctg att cat gaa gcg ctt gaa ctt gtc tat tcc Tyr Glu Gly Asp Met Leu Ile His Glu Ala Leu Glu Leu Val Tyr Ser 195 200 205	624
cta ggt ttc aga ctg acg ggt ttg ttg ccc gga ttt acg gat ccg cgc Leu Gly Phe Arg Leu Thr Gly Leu Leu Pro Gly Phe Thr Asp Pro Arg 210 215 220	672
aat ggt cga atg ctt caa gct gac ggc att ttc ttc cgt ggg gac gat Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg Gly Asp Asp 225 230 235 240	720
tga	723
<210> 20	
<211> 240	
<212> PRT	
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Met Asp Phe Leu Arg Asn Ala Gly Leu Met Ala Arg Asn Val Ser Thr 1 5 10 15	
Glu Met Leu Arg His Phe Glu Arg Lys Arg Leu Leu Val Asn Gln Phe 20 25 30	
Lys Ala Tyr Gly Val Asn Val Val Ile Asp Val Gly Ala Asn Ser Gly 35 40 45	
Gln Phe Gly Ser Ala Leu Arg Arg Ala Gly Phe Lys Ser Arg Ile Val 50 55 60	

Ser Phe Glu Pro Leu Ser Gly Pro Phe Ala Gln Leu Thr Arg Glu Ser
 65 70 75 80

Ala Ser Asp Pro Leu Trp Glu Cys His Gln Tyr Ala Leu Gly Asp Ala
 85 90 95

Asp Glu Thr Ile Thr Ile Asn Val Ala Gly Asn Ala Gly Ala Ser Ser
 100 105 110

Ser Val Leu Pro Met Leu Lys Ser His Gln Asp Ala Phe Pro Pro Ala
 115 120 125

Asn Tyr Ile Gly Thr Glu Asp Val Ala Ile His Arg Leu Asp Ser Val
 130 135 140

Ala Ser Glu Phe Leu Asn Pro Thr Asp Val Thr Phe Leu Lys Ile Asp
 145 150 155 160

Val Gln Gly Phe Glu Lys Gln Val Ile Ala Gly Ser Lys Ser Thr Leu
 165 170 175

Asn Glu Ser Cys Val Gly Met Gln Leu Glu Leu Ser Phe Ile Pro Leu
 180 185 190

Tyr Glu Gly Asp Met Leu Ile His Glu Ala Leu Glu Leu Val Tyr Ser
 195 200 205

Leu Gly Phe Arg Leu Thr Gly Leu Leu Pro Gly Phe Thr Asp Pro Arg
 210 215 220

Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg Gly Asp Asp
 225 230 235 240

<210> 21
 <211> 801
 <212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)..(798)

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 1 5 10 15

gtg acg ctg caa gcc tgc ctc gga agc atc gtc ggg cag acc tac cgg 96
 Val Thr Leu Gln Ala Cys Leu Gly Ser Ile Val Gly Gln Thr Tyr Arg
 20 25 30

gaa gtg gaa gtg gtc ctt gtc gac ggc ggt tcg acc gat cgg acc ctc 144
 Glu Val Glu Val Val Leu Val Asp Gly Gly Ser Thr Asp Arg Thr Leu
 35 40 45

gac atc gcg aac agt ttc cgc ccg gaa ctc ggc tcg cga ctg gtc gtt 192
 Asp Ile Ala Asn Ser Phe Arg Pro Glu Leu Gly Ser Arg Leu Val Val
 50 55 60

cac agc ggg ccc gat gat ggc ccc tac gac gcc atg aac cgc ggc gtc	240
His Ser Gly Pro Asp Asp Gly Pro Tyr Asp Ala Met Asn Arg Gly Val	
65 70 75 80	
ggc gtg gcc aca ggc gaa tgg gta ctt ttt tta ggc gcc gac gac acc	288
Gly Val Ala Thr Gly Glu Trp Val Leu Phe Leu Gly Ala Asp Asp Thr	
85 90 95	
ctc tac gaa cca acc acg ttg gcc cag gta gcc gct ttt ctc ggc gac	336
Leu Tyr Glu Pro Thr Thr Leu Ala Gln Val Ala Ala Phe Leu Gly Asp	
100 105 110	
cat gcg gca agc cat ctt gtc tat ggc gat gtt gtg atg cgt tcg acg	384
His Ala Ala Ser His Leu Val Tyr Gly Asp Val Val Met Arg Ser Thr	
115 120 125	
aaa agc cgg cat gcc gga cct ttc gac ctc gac cgc ctc cta ttt gag	432
Lys Ser Arg His Ala Gly Pro Phe Asp Leu Asp Arg Leu Leu Phe Glu	
130 135 140	
acg aat ttg tgc cac caa tcg atc ttt tac cgc cgt gag ctt ttc gac	480
Thr Asn Leu Cys His Gln Ser Ile Phe Tyr Arg Arg Glu Leu Phe Asp	
145 150 155 160	
ggc atc ggc cct tac aac ctg cgc tac cga gtc tgg gcg gac tgg gac	528
Gly Ile Gly Pro Tyr Asn Leu Arg Tyr Arg Val Trp Ala Asp Trp Asp	
165 170 175	
ttc aat att cgc tgc ttc tcc aac ccg gcg ctg att acc cgc tac atg	576
Phe Asn Ile Arg Cys Phe Ser Asn Pro Ala Leu Ile Thr Arg Tyr Met	
180 185 190	
gac gtc gtg att tcc gaa tac aac gac atg acc ggc ttc agc atg agg	624
Asp Val Val Ile Ser Glu Tyr Asn Asp Met Thr Gly Phe Ser Met Arg	
195 200 205	
cag ggg act gat aaa gag ttc aga aaa cgg ctg cca atg tac ttc tgg	672
Gln Gly Thr Asp Lys Glu Phe Arg Lys Arg Leu Pro Met Tyr Phe Trp	
210 215 220	
gtt gca ggg tgg gag act tgc agg cgc atg ctg gcg ttt ttg aaa gac	720
Val Ala Gly Trp Glu Thr Cys Arg Arg Met Leu Ala Phe Leu Lys Asp	
225 230 235 240	
aag gag aat cgc cgt ctg gcc ttg cgt acg cgg ttg ata agg gtt aag	768
Lys Glu Asn Arg Arg Leu Ala Leu Arg Thr Arg Leu Ile Arg Val Lys	
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gcc gtc tcc aaa gaa cga agc gca gaa ccg tag	801
Ala Val Ser Lys Glu Arg Ser Ala Glu Pro	
260 265	
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<211> 266	
<212> PRT	
<213> Mycobacterium	
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Val Thr Leu Gln Ala Cys Leu Gly Ser Ile Val Gly Gln Thr Tyr Arg
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Glu Val Glu Val Val Leu Val Asp Gly Gly Ser Thr Asp Arg Thr Leu
 35 40 45

Asp Ile Ala Asn Ser Phe Arg Pro Glu Leu Gly Ser Arg Leu Val Val
 50 55 60

His Ser Gly Pro Asp Asp Gly Pro Tyr Asp Ala Met Asn Arg Gly Val
 65 70 75 80

Gly Val Ala Thr Gly Glu Trp Val Leu Phe Leu Gly Ala Asp Asp Thr
 85 90 95

Leu Tyr Glu Pro Thr Thr Leu Ala Gln Val Ala Ala Phe Leu Gly Asp
 100 105 110

His Ala Ala Ser His Leu Val Tyr Gly Asp Val Val Met Arg Ser Thr
 115 120 125

Lys Ser Arg His Ala Gly Pro Phe Asp Leu Asp Arg Leu Leu Phe Glu
 130 135 140

Thr Asn Leu Cys His Gln Ser Ile Phe Tyr Arg Arg Glu Leu Phe Asp
 145 150 155 160

Gly Ile Gly Pro Tyr Asn Leu Arg Tyr Arg Val Trp Ala Asp Trp Asp
 165 170 175

Phe Asn Ile Arg Cys Phe Ser Asn Pro Ala Leu Ile Thr Arg Tyr Met
 180 185 190

Asp Val Val Ile Ser Glu Tyr Asn Asp Met Thr Gly Phe Ser Met Arg
 195 200 205

Gln Gly Thr Asp Lys Glu Phe Arg Lys Arg Leu Pro Met Tyr Phe Trp
 210 215 220

Val Ala Gly Trp Glu Thr Cys Arg Arg Met Leu Ala Phe Leu Lys Asp
 225 230 235 240

Lys Glu Asn Arg Arg Leu Ala Leu Arg Thr Arg Leu Ile Arg Val Lys
 245 250 255

Ala Val Ser Lys Glu Arg Ser Ala Glu Pro
 260 265

<210> 23
 <211> 801
 <212> DNA
 <213> *Mycobacterium*

<220>
 <221> CDS
 <222> (1)..(798)

<400> 23

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gtg acg ctg caa gcc tgc ctc gga agc atc gtc ggg cag acc tac cgg	96
Val Thr Leu Gln Ala Cys Leu Gly Ser Ile Val Gly Gln Thr Tyr Arg	
20 25 30	
gaa gtg gaa gtg gtc ctt gtc gac ggc ggt tcg acc gat cgg acc ctc	144
Glu Val Glu Val Val Leu Val Asp Gly Gly Ser Thr Asp Arg Thr Leu	
35 40 45	
gac atc gcg aac agt ttc cgc ccg gaa ctc ggc tcg cga ctg gtc gtt	192
Asp Ile Ala Asn Ser Phe Arg Pro Glu Leu Gly Ser Arg Leu Val Val	
50 55 60	
cac agc ggg ccc gat gat ggc ccc tac gac gcc atg aac cgc ggc gtc	240
His Ser Gly Pro Asp Asp Gly Pro Tyr Asp Ala Met Asn Arg Gly Val	
65 70 75 80	
ggc gta gcc aca ggc gaa tgg gta ctt ttt tta ggc gcc gac gac acc	288
Gly Val Ala Thr Gly Glu Trp Val Leu Phe Leu Gly Ala Asp Asp Thr	
85 90 95	
ctc tac gaa cca acc acg ttg gcc cag gta gcc gct ttt ctc ggc gac	336
Leu Tyr Glu Pro Thr Thr Leu Ala Gln Val Ala Ala Phe Leu Gly Asp	
100 105 110	
cat gcg gca agc cat ctt gtc tat ggc gat gtt gtg atg cgt tcg acg	384
His Ala Ala Ser His Leu Val Tyr Gly Asp Val Val Met Arg Ser Thr	
115 120 125	
aaa agc cgg cat gcc gga cct ttc gac ctc gac cgc ctc cta ttt gag	432
Lys Ser Arg His Ala Gly Pro Phe Asp Leu Asp Arg Leu Leu Phe Glu	
130 135 140	
acg aat ttg tgc cac caa tcg atc ttt tac cgc cgt gag ctt ttc gac	480
Thr Asn Leu Cys His Gln Ser Ile Phe Tyr Arg Arg Glu Leu Phe Asp	
145 150 155 160	
ggc atc ggc cct tac aac ctg cgc tac cga gtc tgg gcg gac tgg gac	528
Gly Ile Gly Pro Tyr Asn Leu Arg Tyr Arg Val Trp Ala Asp Trp Asp	
165 170 175	
ttc aat att cgc tgc ttc tcc aac ccg gcg ctg att acc cgc tac atg	576
Phe Asn Ile Arg Cys Phe Ser Asn Pro Ala Leu Ile Thr Arg Tyr Met	
180 185 190	
gac gtc gtg att tcc gaa tac aac gac atg acc ggc ttc agc atg agg	624
Asp Val Val Ile Ser Glu Tyr Asn Asp Met Thr Gly Phe Ser Met Arg	
195 200 205	
cag ggg act gat aaa gag ttc aga aaa cgg ctg cca atg tac ttc tgg	672
Gln Gly Thr Asp Lys Glu Phe Arg Lys Arg Leu Pro Met Tyr Phe Trp	
210 215 220	
gtt gca ggg tgg gag act tgc agg cgc atg ctg gcg ttt ttg aaa gac	720
Val Ala Gly Trp Glu Thr Cys Arg Arg Met Leu Ala Phe Leu Lys Asp	
225 230 235 240	

aag gag aat cgc cgt ctg gcc ttg cgt acg cgg ttg ata agg gtt aag	768
Lys Glu Asn Arg Arg Leu Ala Leu Arg Thr Arg Leu Ile Arg Val Lys	
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Glu Val Glu Val Val Leu Val Asp Gly Gly Ser Thr Asp Arg Thr Leu	
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50 55 60	
His Ser Gly Pro Asp Asp Gly Pro Tyr Asp Ala Met Asn Arg Gly Val	
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85 90 95	
Leu Tyr Glu Pro Thr Thr Leu Ala Gln Val Ala Ala Phe Leu Gly Asp	
100 105 110	
His Ala Ala Ser His Leu Val Tyr Gly Asp Val Val Met Arg Ser Thr	
115 120 125	
Lys Ser Arg His Ala Gly Pro Phe Asp Leu Asp Arg Leu Leu Phe Glu	
130 135 140	
Thr Asn Leu Cys His Gln Ser Ile Phe Tyr Arg Arg Glu Leu Phe Asp	
145 150 155 160	
Gly Ile Gly Pro Tyr Asn Leu Arg Tyr Arg Val Trp Ala Asp Trp Asp	
165 170 175	
Phe Asn Ile Arg Cys Phe Ser Asn Pro Ala Leu Ile Thr Arg Tyr Met	
180 185 190	
Asp Val Val Ile Ser Glu Tyr Asn Asp Met Thr Gly Phe Ser Met Arg	
195 200 205	
Gln Gly Thr Asp Lys Glu Phe Arg Lys Arg Leu Pro Met Tyr Phe Trp	
210 215 220	
Val Ala Gly Trp Glu Thr Cys Arg Arg Met Leu Ala Phe Leu Lys Asp	
225 230 235 240	

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Ala Val Ser Lys Glu Arg Ser Ala Glu Pro
 260 265

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 Gly Gly Ser Leu Leu Val Val Gly Val Ala His Pro Val Gly Leu Ala
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gga ggt gac gac gat gct ggc gtg gtg cag cag ccg atc gag gat gct 144
 Gly Gly Asp Asp Asp Ala Gly Val Val Gln Gln Pro Ile Glu Asp Ala
 35 40 45

ggc ggc ggt ggt gtg ctc ggg cag gaa tcg ccc cca ttg ttc gaa ggg 192
 Gly Gly Gly Gly Val Leu Gly Gln Glu Ser Pro Pro Leu Phe Glu Gly
 50 55 60

cca atg cga ggc gat ggc cag gga gcg gcg ctc gta gcc ggc agc cac 240
 Pro Met Arg Gly Asp Gly Gln Gly Ala Ala Leu Val Ala Gly Ser His
 65 70 75 80

gag ccg gaa caa cag ttg agt ccc ggt gtc gtc gag cgg ggc gaa gcc 288
 Glu Pro Glu Gln Gln Leu Ser Pro Gly Val Val Glu Arg Gly Glu Ala
 85 90 95

gat ctc gtc caa gat gac cag atc cgc gcg gag cag ggt gtc gat gat 336
 Asp Leu Val Gln Asp Asp Gln Ile Arg Ala Glu Gln Gly Val Asp Asp
 100 105 110

ctt gcc gac ggt gtt gtc ggc cag gcc gcg gta gag gac ctc gat cag 384
 Leu Ala Asp Gly Val Val Gly Gln Ala Ala Val Glu Asp Leu Asp Gln
 115 120 125

gtc ggc ggc ggt gaa gta gcg gac ttt gaa tcc ggc gtg gac ggc agc 432
 Val Gly Gly Glu Val Ala Asp Phe Glu Ser Gly Val Asp Gly Ser
 130 135 140

gtg ccc gca gcc gat gag cag gtg act ttt gcc cgt acc agg tgg gcc 480
 Val Pro Ala Ala Asp Glu Gln Val Thr Phe Ala Arg Thr Arg Trp Ala
 145 150 155 160

aat gac cgc cag gtt ctg ttg tgc ccg aat cca ttc cag gct cga cag 528
 Asn Asp Arg Gln Val Leu Leu Cys Pro Asn Pro Phe Gln Ala Arg Gln
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gta gtc gaa cgt ggc tgc ggt gat cga cga tcc ggt gac gtc gaa ccc	576																																																				
Val Val Glu Arg Gly Cys Gly Asp Arg Arg Ser Gly Asp Val Glu Pro																																																					
180	185	190		gtc gag ggt ctt ggt gac cgg gaa ggc tgc ggc ctt gag acg gtt ggc	624	Val Glu Gly Leu Gly Asp Arg Glu Gly Cys Gly Leu Glu Thr Val Gly		195	200	205		ggg gtt gga ggc atc gcg ggc agc gat ctc ggc ctc aac caa cgt ccg	672	Gly Val Gly Gly Ile Ala Gly Ser Asp Leu Gly Leu Asn Gln Arg Pro		210	215	220		cag gat ctc ctc cgg tgt cca gcg ttg cgt ctt ggc gac ttg caa cac	720	Gln Asp Leu Leu Arg Cys Pro Ala Leu Arg Leu Gly Asp Leu Gln His		225	230	235	240	ctc ggc ggc gtt gcg gcg cac cgt ggc cag ctt caa ccg ccg cag ccg	768	Leu Gly Gly Val Ala Ala His Arg Gly Gln Leu Gln Pro Pro Gln Arg		245	250	255		cgc gtc aag gtc agc agc cag cgg tgc cgc cga gga cgg tgc cac ccg	816	Arg Val Lys Val Ser Ser Gln Arg Cys Arg Arg Gly Arg Cys His Arg		260	265	270		ctt ggc agc ggt ggt cat gag gcc gtc ccg tcg gtg ttg atc ttg	864	Leu Gly Ser Gly His Glu Ala Val Pro Ser Val Val Leu Ile Leu		275	280	285		tag	867
190																																																					
gtc gag ggt ctt ggt gac cgg gaa ggc tgc ggc ctt gag acg gtt ggc	624																																																				
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205																																																					
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Gly Val Gly Gly Ile Ala Gly Ser Asp Leu Gly Leu Asn Gln Arg Pro																																																					
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220																																																					
cag gat ctc ctc cgg tgt cca gcg ttg cgt ctt ggc gac ttg caa cac	720																																																				
Gln Asp Leu Leu Arg Cys Pro Ala Leu Arg Leu Gly Asp Leu Gln His																																																					
225	230	235	240	ctc ggc ggc gtt gcg gcg cac cgt ggc cag ctt caa ccg ccg cag ccg	768	Leu Gly Gly Val Ala Ala His Arg Gly Gln Leu Gln Pro Pro Gln Arg		245	250	255		cgc gtc aag gtc agc agc cag cgg tgc cgc cga gga cgg tgc cac ccg	816	Arg Val Lys Val Ser Ser Gln Arg Cys Arg Arg Gly Arg Cys His Arg		260	265	270		ctt ggc agc ggt ggt cat gag gcc gtc ccg tcg gtg ttg atc ttg	864	Leu Gly Ser Gly His Glu Ala Val Pro Ser Val Val Leu Ile Leu		275	280	285		tag	867																								
235	240																																																				
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Leu Gly Gly Val Ala Ala His Arg Gly Gln Leu Gln Pro Pro Gln Arg																																																					
245	250	255		cgc gtc aag gtc agc agc cag cgg tgc cgc cga gga cgg tgc cac ccg	816	Arg Val Lys Val Ser Ser Gln Arg Cys Arg Arg Gly Arg Cys His Arg		260	265	270		ctt ggc agc ggt ggt cat gag gcc gtc ccg tcg gtg ttg atc ttg	864	Leu Gly Ser Gly His Glu Ala Val Pro Ser Val Val Leu Ile Leu		275	280	285		tag	867																																
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cgc gtc aag gtc agc agc cag cgg tgc cgc cga gga cgg tgc cac ccg	816																																																				
Arg Val Lys Val Ser Ser Gln Arg Cys Arg Arg Gly Arg Cys His Arg																																																					
260	265	270		ctt ggc agc ggt ggt cat gag gcc gtc ccg tcg gtg ttg atc ttg	864	Leu Gly Ser Gly His Glu Ala Val Pro Ser Val Val Leu Ile Leu		275	280	285		tag	867																																								
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Leu Gly Ser Gly His Glu Ala Val Pro Ser Val Val Leu Ile Leu																																																					
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10	15																																												
Gly Gly Ser Leu Leu Val Val Gly Val Ala His Pro Val Gly Leu Ala																																													
20	25	30		Gly Gly Asp Asp Asp Ala Gly Val Val Gln Gln Pro Ile Glu Asp Ala		35	40	45		Gly Gly Gly Gly Val Leu Gly Gln Glu Ser Pro Pro Leu Phe Glu Gly		50	55	60		Pro Met Arg Gly Asp Gly Gln Gly Ala Ala Leu Val Ala Gly Ser His		65	70	75	80	Glu Pro Glu Gln Gln Leu Ser Pro Gly Val Val Glu Arg Gly Glu Ala		85	90	95		Asp Leu Val Gln Asp Asp Gln Ile Arg Ala Glu Gln Gly Val Asp Asp		100	105	110		Leu Ala Asp Gly Val Val Gly Gln Ala Ala Val Glu Asp Leu Asp Gln		115	120	125							
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Gly Gly Asp Asp Asp Ala Gly Val Val Gln Gln Pro Ile Glu Asp Ala																																													
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Gly Gly Gly Gly Val Leu Gly Gln Glu Ser Pro Pro Leu Phe Glu Gly																																													
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60																																													
Pro Met Arg Gly Asp Gly Gln Gly Ala Ala Leu Val Ala Gly Ser His																																													
65	70	75	80	Glu Pro Glu Gln Gln Leu Ser Pro Gly Val Val Glu Arg Gly Glu Ala		85	90	95		Asp Leu Val Gln Asp Asp Gln Ile Arg Ala Glu Gln Gly Val Asp Asp		100	105	110		Leu Ala Asp Gly Val Val Gly Gln Ala Ala Val Glu Asp Leu Asp Gln		115	120	125																									
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Glu Pro Glu Gln Gln Leu Ser Pro Gly Val Val Glu Arg Gly Glu Ala																																													
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Asp Leu Val Gln Asp Asp Gln Ile Arg Ala Glu Gln Gly Val Asp Asp																																													
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Leu Ala Asp Gly Val Val Gly Gln Ala Ala Val Glu Asp Leu Asp Gln																																													
115	120	125																																											
125																																													

Val Gly Gly Glu Val Ala Asp Phe Glu Ser Gly Val Asp Gly Ser
 130 135 140

Val Pro Ala Ala Asp Glu Gln Val Thr Phe Ala Arg Thr Arg Trp Ala
 145 150 155 160

Asn Asp Arg Gln Val Leu Leu Cys Pro Asn Pro Phe Gln Ala Arg Gln
 165 170 175

Val Val Glu Arg Gly Cys Gly Asp Arg Arg Ser Gly Asp Val Glu Pro
 180 185 190

Val Glu Gly Leu Gly Asp Arg Glu Gly Cys Gly Leu Glu Thr Val Gly
 195 200 205

Gly Val Gly Gly Ile Ala Gly Ser Asp Leu Gly Leu Asn Gln Arg Pro
 210 215 220

Gln Asp Leu Leu Arg Cys Pro Ala Leu Arg Leu Gly Asp Leu Gln His
 225 230 235 240

Leu Gly Gly Val Ala Ala His Arg Gly Gln Leu Gln Pro Pro Gln Arg
 245 250 255

Arg Val Lys Val Ser Ser Gln Arg Cys Arg Arg Gly Arg Cys His Arg
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<211> 1739

<212> DNA

<213> Mycobacterium

<220>

<221> CDS

<222> (1)..(945)

<400> 27

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tgc cac ggt gcg gat ccg caa tcg aag ggc atc gtg gag aac ctc tgt	144
Cys His Gly Ala Asp Pro Gln Ser Lys Gly Ile Val Glu Asn Leu Cys	
35 40 45	

ggc tac gct cag gac gac ctt gcg gtg ccg ctg ctg acc gaa gct gcg	192
Gly Tyr Ala Gln Asp Asp Leu Ala Val Pro Leu Leu Thr Glu Ala Ala	
50 55 60	

tta gcc ggt gag cag gtc gac cta cgt gcc ctc aac gcc cag gcg caa	240
Leu Ala Gly Glu Gln Val Asp Leu Arg Ala Leu Asn Ala Gln Ala Gln	
65 70 75 80	

cta tgg tgc gcc gag gtc aat gcc acg gtc cac tcg gag atc tgc gcc	288
Leu Trp Cys Ala Glu Val Asn Ala Thr Val His Ser Glu Ile Cys Ala	
85 90 95	
gtg ccc aac gat cgc ttg gtt gac gag cgc acc gtc ttg agg gag ctg	336
Val Pro Asn Asp Arg Leu Val Asp Glu Arg Thr Val Leu Arg Glu Leu	
100 105 110	
ccc tcg ctg cgg ccg acg atc ggc tcg ggg tcg gtc cgt aag gtc	384
Pro Ser Leu Arg Pro Thr Ile Gly Ser Gly Ser Val Arg Arg Lys Val	
115 120 125	
gac ggc ctc tcg tgc atc cgt tac ggc tca gct cgt tac tcg gtg cct	432
Asp Gly Leu Ser Cys Ile Arg Tyr Gly Ser Ala Arg Tyr Ser Val Pro	
130 135 140	
cag cgg ctc gtc ggt gcc acc gtc gcg gtc gtc gat cat ggc gcc	480
Gln Arg Leu Val Gly Ala Thr Val Ala Val Val Val Asp His Gly Ala	
145 150 155 160	
ctg atc ctg ttg gaa cct gcg acc ggt gtc atc gtc gcc gag cac gag	528
Leu Ile Leu Leu Glu Pro Ala Thr Gly Val Ile Val Ala Glu His Glu	
165 170 175	
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Leu Val Ser Pro Gly Glu Val Ser Ile Leu Asp Glu His Tyr Asp Gly	
180 185 190	
ccc aga ccc gca ccc tcg cgt ggt cct cgc ccg aaa acc caa gca gag	624
Pro Arg Pro Ala Pro Ser Arg Gly Pro Arg Pro Lys Thr Gln Ala Glu	
195 200 205	
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Lys Arg Phe Cys Ala Leu Gly Thr Glu Ala Gln Gln Phe Leu Val Gly	
210 215 220	
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Ala Ala Ala Ile Gly Asn Thr Arg Leu Lys Ser Glu Leu Asp Ile Leu	
225 230 235 240	
ctc ggc ctt ggc gcc cac ggc gaa cag gct ttg att gac gcg ctg	768
Leu Gly Leu Gly Ala Ala His Gly Glu Gln Ala Leu Ile Asp Ala Leu	
245 250 255	
cgc cgg gcg gtt gcg ttt cgc cgg ttc cgc gct gcc gac gtg cgc tcg	816
Arg Arg Ala Val Ala Phe Arg Arg Phe Arg Ala Ala Asp Val Arg Ser	
260 265 270	
atc ctg gcc gcc ggc acc cca caa ccc cgc ccc gcc ggc gac	864
Ile Leu Ala Ala Gly Ala Gly Thr Pro Gln Pro Arg Pro Ala Gly Asp	
275 280 285	
gca ctc gtg ctc gat ctg ccc acc gtc gag acc cgc tcg ttg gag gcc	912
Ala Leu Val Leu Asp Leu Pro Thr Val Glu Thr Arg Ser Leu Glu Ala	
290 295 300	
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Tyr Lys Ile Asn Thr Thr Asp Gly Thr Ala Ser	
305 310 315	
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aagctggcca cggtgccgcg caacgcccgc gaggtgttgc aagtcgccaa gacgcaacgc 1085
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Cys	His	Gly	Ala	Asp	Pro	Gln	Ser	Lys	Gly	Ile	Val	Glu	Asn	Leu	Cys
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Gly	Tyr	Ala	Gln	Asp	Asp	Leu	Ala	Val	Pro	Leu	Leu	Thr	Glu	Ala	Ala
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Leu	Ala	Gly	Glu	Gln	Val	Asp	Leu	Arg	Ala	Leu	Asn	Ala	Gln	Ala	Gln
65					70				75			80			

Leu	Trp	Cys	Ala	Glu	Val	Asn	Ala	Thr	Val	His	Ser	Glu	Ile	Cys	Ala
					85				90			95			

Val	Pro	Asn	Asp	Arg	Leu	Val	Asp	Glu	Arg	Thr	Val	Leu	Arg	Glu	Leu
100						105					110				

Pro	Ser	Leu	Arg	Pro	Thr	Ile	Gly	Ser	Gly	Ser	Val	Arg	Arg	Lys	Val
115						120				125					

Asp	Gly	Leu	Ser	Cys	Ile	Arg	Tyr	Gly	Ser	Ala	Arg	Tyr	Ser	Val	Pro
130						135				140					

Gln	Arg	Leu	Val	Gly	Ala	Thr	Val	Ala	Val	Val	Val	Asp	His	Gly	Ala
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Leu Ile Leu Leu Glu Pro Ala Thr Gly Val Ile Val Ala Glu His Glu
 165 170 175

Leu Val Ser Pro Gly Glu Val Ser Ile Leu Asp Glu His Tyr Asp Gly
 180 185 190

Pro Arg Pro Ala Pro Ser Arg Gly Pro Arg Pro Lys Thr Gln Ala Glu
 195 200 205

Lys Arg Phe Cys Ala Leu Gly Thr Glu Ala Gln Gln Phe Leu Val Gly
 210 215 220

Ala Ala Ala Ile Gly Asn Thr Arg Leu Lys Ser Glu Leu Asp Ile Leu
 225 230 235 240

Leu Gly Leu Gly Ala Ala His Gly Glu Gln Ala Leu Ile Asp Ala Leu
 245 250 255

Arg Arg Ala Val Ala Phe Arg Arg Phe Arg Ala Ala Asp Val Arg Ser
 260 265 270

Ile Leu Ala Ala Gly Ala Gly Thr Pro Gln Pro Arg Pro Ala Gly Asp
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Ala Leu Val Leu Asp Leu Pro Thr Val Glu Thr Arg Ser Leu Glu Ala
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 35 40 45

Thr Pro Glu Glu Ile Leu Arg Thr Leu Val Glu Ala Glu Ile Ala Ala
 50 55 60

Arg Asp Ala Ser Asn Thr Ala Asn Arg Leu Lys Ala Ala Ala Phe Pro
 65 70 75 80

Val Thr Lys Thr Leu Asp Gly Phe Asp Val Thr Gly Ser Ser Ile Thr
 85 90 95

Ala Ala Thr Phe Asp Tyr Leu Ser Ser Leu Glu Trp Ile Arg Ala Gln
 100 105 110

 Gln Asn Leu Ala Val Ile Gly Pro Pro Gly Thr Gly Lys Ser His Leu
 115 120 125

 Leu Ile Gly Cys Gly His Ala Ala Val His Ala Gly Phe Lys Val Arg
 130 135 140

 Tyr Phe Thr Ala Ala Asp Leu Ile Glu Val Leu Tyr Arg Gly Leu Ala
 145 150 155 160

 Asp Asn Thr Val Gly Lys Ile Ile Asp Thr Leu Leu Arg Ala Asp Leu
 165 170 175

 Val Ile Leu Asp Glu Ile Gly Phe Ala Pro Leu Asp Asp Thr Gly Thr
 180 185 190

 Gln Leu Leu Phe Arg Leu Val Ala Ala Gly Tyr Glu Arg Arg Ser Leu
 195 200 205

 Ala Ile Ala Ser His Trp Pro Phe Glu Gln Trp Gly Arg Phe Leu Pro
 210 215 220

 Glu His Thr Thr Ala Ala Ser Ile Leu Asp Arg Leu Leu His His Ala
 225 230 235 240

 Ser Ile Val Val Thr Ser Gly Glu Ser Tyr Arg Met Arg His Ala Asp
 245 250 255

 His Lys Lys Gly Ala Ala Lys Asn
 260

<210> 30
 <211> 789
 <212> DNA
 <213> Mycobacterium

 <220>
 <221> CDS
 <222> (1)..(786)

<400> 30
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 Met Thr Ser Ala Pro Thr Val Ser Val Ile Thr Ile Ser Phe Asn Asp
 1 5 10 15

 ctc gac ggg ttg cag cgc acg gtg aaa agt gtg cgg gcg caa cgc tac 96
 Leu Asp Gly Leu Gln Arg Thr Val Lys Ser Val Arg Ala Gln Arg Tyr
 20 25 30

 cgg gga cgc atc gag cac atc gta atc gac ggt ggc agc ggc gac gac 144
 Arg Gly Arg Ile Glu His Ile Val Ile Asp Gly Gly Ser Gly Asp Asp
 35 40 45

 gtg gtg gca tac ctg tcc ggg tgt gaa cca ggc ttc gcg tat tgg cag 192
 Val Val Ala Tyr Leu Ser Gly Cys Glu Pro Gly Phe Ala Tyr Trp Gln
 50 55 60

tcc gag ccc gac ggc ggg cgg tac gac gcg atg aac cag ggc atc gcg	240
Ser Glu Pro Asp Gly Gly Arg Tyr Asp Ala Met Asn Gln Gly Ile Ala	
65 70 75 80	
cac gca tcg ggt gat ctg ttg tgg ttc ttg cac tcc gcc gat cgt ttt	288
His Ala Ser Gly Asp Leu Leu Trp Phe Leu His Ser Ala Asp Arg Phe	
85 90 95	
tcc ggg ccc gac gtg gta gcc cag gcc gtg gag gcg cta tcc ggc aag	336
Ser Gly Pro Asp Val Val Ala Gln Ala Val Glu Ala Leu Ser Gly Lys	
100 105 110	
gga ccg gtg tcc gaa ttg tgg ggc ttc ggg atg gat cgt ctc gtc ggg	384
Gly Pro Val Ser Glu Leu Trp Gly Phe Gly Met Asp Arg Leu Val Gly	
115 120 125	
ctc gat cgg gtg cgc ggc ccg ata cct ttc agc ctg cgc aaa ttc ctg	432
Leu Asp Arg Val Arg Gly Pro Ile Pro Phe Ser Leu Arg Lys Phe Leu	
130 135 140	
gcc ggc aag cag gtt gtt ccg cat caa gca tcg ttc ttc gga tca tcg	480
Ala Gly Lys Gln Val Val Pro His Gln Ala Ser Phe Phe Gly Ser Ser	
145 150 155 160	
ctg gtg gcc aag atc ggt ggc tac gac ctt gat ttc ggg atc gcc gcc	528
Leu Val Ala Lys Ile Gly Gly Tyr Asp Leu Asp Phe Gly Ile Ala Ala	
165 170 175	
gac cag gaa ttc ata ttg cgg gcc gcg ctg gta tgc gag ccg gtc acg	576
Asp Gln Glu Phe Ile Leu Arg Ala Ala Leu Val Cys Glu Pro Val Thr	
180 185 190	
att cgg tgt gtg ctg tgc gag ttc gac acc acg ggc gtc ggc tcg cac	624
Ile Arg Cys Val Leu Cys Glu Phe Asp Thr Thr Gly Val Gly Ser His	
195 200 205	
cgg gaa cca agc gcg gtc ttc ggt gat ctg cgc cgc atg ggc gac ctt	672
Arg Glu Pro Ser Ala Val Phe Gly Asp Leu Arg Arg Met Gly Asp Leu	
210 215 220	
cat cgc cgc tac ccg ttc ggg gga agg cga ata tca cat gcc tac cta	720
His Arg Arg Tyr Pro Phe Gly Gly Arg Arg Ile Ser His Ala Tyr Leu	
225 230 235 240	
cgc ggc cgg gag ttc tac gcc tac aac agt cga ttc tgg gaa aac gtc	768
Arg Gly Arg Glu Phe Tyr Ala Tyr Asn Ser Arg Phe Trp Glu Asn Val	
245 250 255	
ttc acg cga atg tcg aaa tag	789
Phe Thr Arg Met Ser Lys	
260	

<210> 31
 <211> 262
 <212> PRT
 <213> Mycobacterium

<400> 31
 Met Thr Ser Ala Pro Thr Val Ser Val Ile Thr Ile Ser Phe Asn Asp
 1 5 10 15

Leu Asp Gly Leu Gln Arg Thr Val Lys Ser Val Arg Ala Gln Arg Tyr
 20 25 30

Arg Gly Arg Ile Glu His Ile Val Ile Asp Gly Gly Ser Gly Asp Asp
 35 40 45

Val Val Ala Tyr Leu Ser Gly Cys Glu Pro Gly Phe Ala Tyr Trp Gln
 50 55 60

Ser Glu Pro Asp Gly Gly Arg Tyr Asp Ala Met Asn Gln Gly Ile Ala
 65 70 75 80

His Ala Ser Gly Asp Leu Leu Trp Phe Leu His Ser Ala Asp Arg Phe
 85 90 95

Ser Gly Pro Asp Val Val Ala Gln Ala Val Glu Ala Leu Ser Gly Lys
 100 105 110

Gly Pro Val Ser Glu Leu Trp Gly Phe Gly Met Asp Arg Leu Val Gly
 115 120 125

Leu Asp Arg Val Arg Gly Pro Ile Pro Phe Ser Leu Arg Lys Phe Leu
 130 135 140

Ala Gly Lys Gln Val Val Pro His Gln Ala Ser Phe Phe Gly Ser Ser
 145 150 155 160

Leu Val Ala Lys Ile Gly Gly Tyr Asp Leu Asp Phe Gly Ile Ala Ala
 165 170 175

Asp Gln Glu Phe Ile Leu Arg Ala Ala Leu Val Cys Glu Pro Val Thr
 180 185 190

Ile Arg Cys Val Leu Cys Glu Phe Asp Thr Thr Gly Val Gly Ser His
 195 200 205

Arg Glu Pro Ser Ala Val Phe Gly Asp Leu Arg Arg Met Gly Asp Leu
 210 215 220

His Arg Arg Tyr Pro Phe Gly Gly Arg Arg Ile Ser His Ala Tyr Leu
 225 230 235 240

Arg Gly Arg Glu Phe Tyr Ala Tyr Asn Ser Arg Phe Trp Glu Asn Val
 245 250 255

Phe Thr Arg Met Ser Lys
 260

<210> 32
 <211> 1023
 <212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)...(1020)

<400> 32

gtg aag cga gcg ctc atc acc gga atc acc ggc cag gac ggc tcg tat	48
Met Lys Arg Ala Leu Ile Thr Gly Ile Thr Gly Gln Asp Gly Ser Tyr	
1 5 10 15	
ctc gcc gaa ctg ctg ctg gcc aag ggg tat gag gtt cac ggg ctc atc	96
Leu Ala Glu Leu Leu Ala Lys Gly Tyr Glu Val His Gly Leu Ile	
20 25 30	
cgg cgc gct tcg acg ttc aac acc tcg cgg atc gat cac ctc tac gtc	144
Arg Arg Ala Ser Thr Phe Asn Thr Ser Arg Ile Asp His Leu Tyr Val	
35 40 45	
gac ccg cac caa ccg ggc gcg cgg ctg ttt ctg cac tat ggt gac ctg	192
Asp Pro His Gln Pro Gly Ala Arg Leu Phe Leu His Tyr Gly Asp Leu	
50 55 60	
atc gac gga acc cgg ttg gtg acc ctg ctg agc acc atc gaa ccc gac	240
Ile Asp Gly Thr Arg Leu Val Thr Leu Leu Ser Thr Ile Glu Pro Asp	
65 70 75 80	
gag gtg tac aac ctg gcg cag tca cac gtg cgg gtg agc ttc gac	288
Glu Val Tyr Asn Leu Ala Ala Gln Ser His Val Arg Val Ser Phe Asp	
85 90 95	
gaa ccc gtg cac acc ggt gac acc acc ggc atg gga tcc atg cga ctg	336
Glu Pro Val His Thr Gly Asp Thr Thr Gly Met Gly Ser Met Arg Leu	
100 105 110	
ctg gaa gcc gtt cgg ctc tct cgg gtg cac tgc cgc ttc tat cag gcg	384
Leu Glu Ala Val Arg Leu Ser Arg Val His Cys Arg Phe Tyr Gln Ala	
115 120 125	
tcc tcg tcg gag atg ttc ggc gcc tcg cca ccg cag aac gag ctg	432
Ser Ser Ser Glu Met Phe Gly Ala Ser Pro Pro Pro Gln Asn Glu Leu	
130 135 140	
acg ccg ttc tac ccg cgg tca ccg tat ggc gcc gcc aag gtc tat tcg	480
Thr Pro Phe Tyr Pro Arg Ser Pro Tyr Gly Ala Ala Lys Val Tyr Ser	
145 150 155 160	
tac tgg gcg acc cgc aat tat cgc gaa gcg tac gga ttg ttc gcc gtt	528
Tyr Trp Ala Thr Arg Asn Tyr Arg Glu Ala Tyr Gly Leu Phe Ala Val	
165 170 175	
aac ggc atc ttg ttc aat cac gaa tca ccg cgg cgc ggt gag acg ttc	576
Asn Gly Ile Leu Phe Asn His Glu Ser Pro Arg Arg Gly Glu Thr Phe	
180 185 190	
gtg acc cga aag atc acc agg gcc gtg gca cgc atc aag gcc ggt atc	624
Val Thr Arg Lys Ile Thr Arg Ala Val Ala Arg Ile Lys Ala Gly Ile	
195 200 205	
cag tcc gag gtc tat atg ggc aat ctg gat gcg gtc cgc gac tgg ggg	672
Gln Ser Glu Val Tyr Met Gly Asn Leu Asp Ala Val Arg Asp Trp Gly	
210 215 220	
tac gcg ccc gaa tac gtc gaa ggc atg tgg cgg atg ctg cag acc gac	720
Tyr Ala Pro Glu Tyr Val Glu Gly Met Trp Arg Met Leu Gln Thr Asp	
225 230 235 240	

gag ccc gac gac ttc gtt ttg gcg acc ggg cgc ggt ttc acc gtg cgt	768		
Glu Pro Asp Asp Phe Val Leu Ala Thr Gly Arg Gly Phe Thr Val Arg			
245	250	255	
gag ttc gcg cg ^g gcc g ^c ttc gag cat gcc ggt ttg gac tgg cag cag	816		
Glu Phe Ala Arg Ala Ala Phe Glu His Ala Gly Leu Asp Trp Gln Gln			
260	265	270	
tac gtg aaa ttc gac caa cgc tat ctg cgg ccc acc gag gtg gat tcg	864		
Tyr Val Lys Phe Asp Gln Arg Tyr Leu Arg Pro Thr Glu Val Asp Ser			
275	280	285	
ctg atc ggc gac g ^c acc aag g ^c t g ^c c gaa ttg ctg ggc tgg agg gct	912		
Leu Ile Gly Asp Ala Thr Lys Ala Ala Glu Leu Leu Gly Trp Arg Ala			
290	295	300	
tcg gtg cac act gac gag ttg gct cgg atc atg gtc gac g ^c gac atg	960		
Ser Val His Thr Asp Glu Leu Ala Arg Ile Met Val Asp Ala Asp Met			
305	310	315	320
g ^c g g ^c g ctg gag tgc gaa g ^c g aag c ^c g tgg atc gac aag c ^c g atg atc	1008		
Ala Ala Leu Glu Cys Glu Gly Lys Pro Trp Ile Asp Lys Pro Met Ile			
325	330	335	
gcc ggc cgg aca tga	1023		
Ala Gly Arg Thr			
340			

<210> 33
 <211> 340
 <212> PRT
 <213> Mycobacterium

<400> 33			
Met Lys Arg Ala Leu Ile Thr Gly Ile Thr Gly Gln Asp Gly Ser Tyr			
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Leu Ala Glu Leu Leu Leu Ala Lys Gly Tyr Glu Val His Gly Leu Ile			
20	25	30	
Arg Arg Ala Ser Thr Phe Asn Thr Ser Arg Ile Asp His Leu Tyr Val			
35	40	45	
Asp Pro His Gln Pro Gly Ala Arg Leu Phe Leu His Tyr Gly Asp Leu			
50	55	60	
Ile Asp Gly Thr Arg Leu Val Thr Leu Leu Ser Thr Ile Glu Pro Asp			
65	70	75	80
Glu Val Tyr Asn Leu Ala Ala Gln Ser His Val Arg Val Ser Phe Asp			
85	90	95	
Glu Pro Val His Thr Gly Asp Thr Thr Gly Met Gly Ser Met Arg Leu			
100	105	110	
Leu Glu Ala Val Arg Leu Ser Arg Val His Cys Arg Phe Tyr Gln Ala			
115	120	125	
Ser Ser Ser Glu Met Phe Gly Ala Ser Pro Pro Pro Gln Asn Glu Leu			
130	135	140	

Thr Pro Phe Tyr Pro Arg Ser Pro Tyr Gly Ala Ala Lys Val Tyr Ser
 145 150 155 160
 Tyr Trp Ala Thr Arg Asn Tyr Arg Glu Ala Tyr Gly Leu Phe Ala Val
 165 170 175
 Asn Gly Ile Leu Phe Asn His Glu Ser Pro Arg Arg Gly Glu Thr Phe
 180 185 190
 Val Thr Arg Lys Ile Thr Arg Ala Val Ala Arg Ile Lys Ala Gly Ile
 195 200 205
 Gln Ser Glu Val Tyr Met Gly Asn Leu Asp Ala Val Arg Asp Trp Gly
 210 215 220
 Tyr Ala Pro Glu Tyr Val Glu Gly Met Trp Arg Met Leu Gln Thr Asp
 225 230 235 240
 Glu Pro Asp Asp Phe Val Leu Ala Thr Gly Arg Gly Phe Thr Val Arg
 245 250 255
 Glu Phe Ala Arg Ala Ala Phe Glu His Ala Gly Leu Asp Trp Gln Gln
 260 265 270
 Tyr Val Lys Phe Asp Gln Arg Tyr Leu Arg Pro Thr Glu Val Asp Ser
 275 280 285
 Leu Ile Gly Asp Ala Thr Lys Ala Ala Glu Leu Leu Gly Trp Arg Ala
 290 295 300
 Ser Val His Thr Asp Glu Leu Ala Arg Ile Met Val Asp Ala Asp Met
 305 310 315 320
 Ala Ala Leu Glu Cys Glu Gly Lys Pro Trp Ile Asp Lys Pro Met Ile
 325 330 335
 Ala Gly Arg Thr
 340

<210> 34
 <211> 732
 <212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)..(729)

<400> 34
 atg agg ctg gcc cgt cgc gct cggt aac atc ttg cgt cgc aac ggc atc 48
 Met Arg Leu Ala Arg Ala Arg Asn Ile Leu Arg Arg Asn Gly Ile
 1 5 10 15
 gag gtg tcg cgc tac ttt gcc gaa ctg gac tgg gaa cgc aat ttc ttg 96
 Glu Val Ser Arg Tyr Phe Ala Glu Leu Asp Trp Glu Arg Asn Phe Leu
 20 25 30

cgc caa ctg caa tcg cat cgg gtc agt gcc gtc gtc gat gtc ggg gcc	144
Arg Gln Leu Gln Ser His Arg Val Ser Ala Val Leu Asp Val Gly Ala	
35 40 45	
aat tcg ggg cag tac gcc agg ggt ctg cgc ggc gcg ggc ttc gcg ggc	192
Asn Ser Gly Gln Tyr Ala Arg Gly Leu Arg Gly Ala Gly Phe Ala Gly	
50 55 60	
cgc atc gtc tcg ttc gag ccc ctg ccc ggg ccc ttt gcc gtc ttg cag	240
Arg Ile Val Ser Phe Glu Pro Leu Pro Gly Pro Phe Ala Val Leu Gln	
65 70 75 80	
cgc agc gcc tcc acg gac ccg ttg tgg gaa tgc cgg cgc tgt gcg ctg	288
Arg Ser Ala Ser Thr Asp Pro Leu Trp Glu Cys Arg Arg Cys Ala Leu	
85 90 95	
ggc gat gtc gat gga acc atc tcg atc aac gtc gcc ggc aac gag ggc	336
Gly Asp Val Asp Gly Thr Ile Ser Ile Asn Val Ala Gly Asn Glu Gly	
100 105 110	
gcc agc agt tcc gtc ttg ccg atg ttg aaa cga cat cag gac gcc ttt	384
Ala Ser Ser Ser Val Leu Pro Met Leu Lys Arg His Gln Asp Ala Phe	
115 120 125	
cca cca gcc aac tac gtg ggc gcc caa cgg gtc ccg ata cat cga ctc	432
Pro Pro Ala Asn Tyr Val Gly Ala Gln Arg Val Pro Ile His Arg Leu	
130 135 140	
gat tcc gtg gct gca gac gtt ctg cgg ccc aac gat att gcg ttc ttg	480
Asp Ser Val Ala Ala Asp Val Leu Arg Pro Asn Asp Ile Ala Phe Leu	
145 150 155 160	
aag atc gac gtt caa gga ttc gag aag cag gtg atc gcg ggt ggc gat	528
Lys Ile Asp Val Gln Gly Phe Glu Lys Gln Val Ile Ala Gly Gly Asp	
165 170 175	
tca acg gtg cac gac cga tgc gtc ggc atg cag ctc gag ctg tct ttc	576
Ser Thr Val His Asp Arg Cys Val Gly Met Gln Leu Glu Leu Ser Phe	
180 185 190	
cag ccg ttg tac gag ggt ggc atg ctc atc cgc gag gcg ctc gat ctc	624
Gln Pro Leu Tyr Glu Gly Gly Met Leu Ile Arg Glu Ala Leu Asp Leu	
195 200 205	
gtg gat tcg ttg ggc ttt acg ctc tcg gga ttg caa ccc ggt ttc acc	672
Val Asp Ser Leu Gly Phe Thr Leu Ser Gly Leu Gln Pro Gly Phe Thr	
210 215 220	
gac ccc cgc aac ggt cga atg ctg cag gcc gat ggc atc ttc ttc cgg	720
Asp Pro Arg Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg	
225 230 235 240	
ggc agc gat tga	732
Gly Ser Asp	

<210> 35
<211> 243
<212> PRT
<213> Mycobacterium

<400> 35
 Met Arg Leu Ala Arg Arg Ala Arg Asn Ile Leu Arg Arg Asn Gly Ile
 1 5 10 15

 Glu Val Ser Arg Tyr Phe Ala Glu Leu Asp Trp Glu Arg Asn Phe Leu
 20 25 30

 Arg Gln Leu Gln Ser His Arg Val Ser Ala Val Leu Asp Val Gly Ala
 35 40 45

 Asn Ser Gly Gln Tyr Ala Arg Gly Leu Arg Gly Ala Gly Phe Ala Gly
 50 55 60

 Arg Ile Val Ser Phe Glu Pro Leu Pro Gly Pro Phe Ala Val Leu Gln
 65 70 75 80

 Arg Ser Ala Ser Thr Asp Pro Leu Trp Glu Cys Arg Arg Cys Ala Leu
 85 90 95

 Gly Asp Val Asp Gly Thr Ile Ser Ile Asn Val Ala Gly Asn Glu Gly
 100 105 110

 Ala Ser Ser Ser Val Leu Pro Met Leu Lys Arg His Gln Asp Ala Phe
 115 120 125

 Pro Pro Ala Asn Tyr Val Gly Ala Gln Arg Val Pro Ile His Arg Leu
 130 135 140

 Asp Ser Val Ala Ala Asp Val Leu Arg Pro Asn Asp Ile Ala Phe Leu
 145 150 155 160

 Lys Ile Asp Val Gln Gly Phe Glu Lys Gln Val Ile Ala Gly Gly Asp
 165 170 175

 Ser Thr Val His Asp Arg Cys Val Gly Met Gln Leu Glu Leu Ser Phe
 180 185 190

 Gln Pro Leu Tyr Glu Gly Gly Met Leu Ile Arg Glu Ala Leu Asp Leu
 195 200 205

 Val Asp Ser Leu Gly Phe Thr Leu Ser Gly Leu Gln Pro Gly Phe Thr
 210 215 220

 Asp Pro Arg Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg
 225 230 235 240

 Gly Ser Asp

<210> 36
 <211> 732
 <212> DNA
 <213> Mycobacterium

 <220>
 <221> CDS
 <222> (1)..(729)

<400> 36

gtg aaa tcg ttg aaa ctc gct cgt ttc atc gcg cgt agc gcc gcc ttc	48
Met Lys Ser Leu Lys Leu Ala Arg Phe Ile Ala Arg Ser Ala Ala Phe	
1 5 10 15	
gag gtt tcg cgc cgc tat tct gag cga gac ctg aag cac cag ttt gtg	96
Glu Val Ser Arg Arg Tyr Ser Glu Arg Asp Leu Lys His Gln Phe Val	
20 25 30	
aag caa ctc aaa tcg cgt cgg gta gat gtc gtt ttc gat gtc ggc gcc	144
Lys Gln Leu Lys Ser Arg Arg Val Asp Val Val Phe Asp Val Gly Ala	
35 40 45	
aac tca gga caa tac gcc gcc ctc cgc cga gca gca tat aag ggc	192
Asn Ser Gly Gln Tyr Ala Ala Gly Leu Arg Arg Ala Ala Tyr Lys Gly	
50 55 60	
cgc att gtc tcg ttc gaa ccg cta tcc gga ccg ttt acg atc ttg gaa	240
Arg Ile Val Ser Phe Glu Pro Leu Ser Gly Pro Phe Thr Ile Leu Glu	
65 70 75 80	
agc aaa gcg tca acg gat cca ctt tgg gat tgc cgg cag cat gcg ttg	288
Ser Lys Ala Ser Thr Asp Pro Leu Trp Asp Cys Arg Gln His Ala Leu	
85 90 95	
ggc gat tct gat gga acg gtt acg atc aat atc gca gga aac gcc ggt	336
Gly Asp Ser Asp Gly Thr Val Thr Ile Asn Ile Ala Gly Asn Ala Gly	
100 105 110	
cag agc agt tcc gtc ttg ccc atg ctg aaa agt cat cag aac gct ttt	384
Gln Ser Ser Val Leu Pro Met Leu Lys Ser His Gln Asn Ala Phe	
115 120 125	
ccc ccg gca aac tat gtc ggt acc caa gag gcg tcc ata cat cga ctt	432
Pro Pro Ala Asn Tyr Val Gly Thr Gln Glu Ala Ser Ile His Arg Leu	
130 135 140	
gat tcc gtg gcg cca gaa ttt cta ggc atg aac ggt gtc gct ttt ctc	480
Asp Ser Val Ala Pro Glu Phe Leu Gly Met Asn Gly Val Ala Phe Leu	
145 150 155 160	
aag gtc gac gtt caa ggc ttt gaa aag cag gtg ctc gcc ggg ggc aaa	528
Lys Val Asp Val Gln Gly Phe Glu Lys Gln Val Leu Ala Gly Gly Lys	
165 170 175	
tca acc ata gat gac cat tgc gtc ggc atg caa ctc gaa ctg tcc ttc	576
Ser Thr Ile Asp Asp His Cys Val Gly Met Gln Leu Glu Leu Ser Phe	
180 185 190	
ctg ccg ttg tac gaa ggt ggc atg ctc att cct gaa gcc ctc gat ctc	624
Leu Pro Leu Tyr Glu Gly Gly Met Leu Ile Pro Glu Ala Leu Asp Leu	
195 200 205	
gtg tat tcc ttg ggc ttc acg ttg acg gga ttg ctg cct tgt ttc att	672
Val Tyr Ser Leu Gly Phe Thr Leu Thr Gly Leu Leu Pro Cys Phe Ile	
210 215 220	
gat gca aat aat ggt cga atg ttg cag gcc gac ggc atc ttt ttc cgc	720
Asp Ala Asn Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg	
225 230 235 240	

gag gac gat tga
Glu Asp Asp

732

<210> 37
<211> 243
<212> PRT
<213> Mycobacterium

<400> 37
Met Lys Ser Leu Lys Leu Ala Arg Phe Ile Ala Arg Ser Ala Ala Phe
1 5 10 15

Glu Val Ser Arg Arg Tyr Ser Glu Arg Asp Leu Lys His Gln Phe Val
20 25 30

Lys Gln Leu Lys Ser Arg Arg Val Asp Val Val Phe Asp Val Gly Ala
35 40 45

Asn Ser Gly Gln Tyr Ala Ala Gly Leu Arg Arg Ala Ala Tyr Lys Gly
50 55 60

Arg Ile Val Ser Phe Glu Pro Leu Ser Gly Pro Phe Thr Ile Leu Glu
65 70 75 80

Ser Lys Ala Ser Thr Asp Pro Leu Trp Asp Cys Arg Gln His Ala Leu
85 90 95

Gly Asp Ser Asp Gly Thr Val Thr Ile Asn Ile Ala Gly Asn Ala Gly
100 105 110

Gln Ser Ser Ser Val Leu Pro Met Leu Lys Ser His Gln Asn Ala Phe
115 120 125

Pro Pro Ala Asn Tyr Val Gly Thr Gln Glu Ala Ser Ile His Arg Leu
130 135 140

Asp Ser Val Ala Pro Glu Phe Leu Gly Met Asn Gly Val Ala Phe Leu
145 150 155 160

Lys Val Asp Val Gln Gly Phe Glu Lys Gln Val Leu Ala Gly Gly Lys
165 170 175

Ser Thr Ile Asp Asp His Cys Val Gly Met Gln Leu Glu Leu Ser Phe
180 185 190

Leu Pro Leu Tyr Glu Gly Gly Met Leu Ile Pro Glu Ala Leu Asp Leu
195 200 205

Val Tyr Ser Leu Gly Phe Thr Leu Thr Gly Leu Leu Pro Cys Phe Ile
210 215 220

Asp Ala Asn Asn Gly Arg Met Leu Gln Ala Asp Gly Ile Phe Phe Arg
225 230 235 240

Glu Asp Asp

<210> 38
<211> 828

<212> DNA
 <213> Mycobacterium

<220>
 <221> CDS
 <222> (1)..(825)

<400> 38

atg	gtg	cag	acg	aaa	cga	tac	gcc	ggc	ttg	acc	gca	gct	aac	aca	aca	aag	48
Met	Val	Gln	Thr	Lys	Arg	Tyr	Ala	Gly	Leu	Thr	Ala	Ala	Asn	Thr	Lys		
1		5							10					15			
aaa	gtc	gcc	atg	gcc	gca	cca	atg	ttt	tcg	atc	atc	atc	ccc	acc	ttg	96	
Lys	Val	Ala	Met	Ala	Ala	Pro	Met		Phe	Ser	Ile	Ile	Ile	Pro	Thr	Leu	
	20							25						30			
aac	gtg	gct	gcg	gta	ttg	cct	gcc	tgc	ctc	gac	agc	atc	gcc	cgt	cag	144	
Asn	Val	Ala	Ala	Val	Leu	Pro	Ala	Cys	Leu	Asp	Ser	Ile	Ala	Arg	Gln		
	35						40					45					
acc	tgc	ggt	gac	ttc	gag	ctg	gta	ctg	gtc	gac	ggc	ggc	tcg	acg	gac	192	
Thr	Cys	Gly	Asp	Phe	Glu	Leu	Val	Leu	Val	Asp	Gly	Gly	Ser	Thr	Asp		
	50					55			60								
gaa	acc	ctc	gac	atc	gcc	aac	att	ttc	gcc	ccc	aac	ctc	ggc	gag	cgg	240	
Glu	Thr	Leu	Asp	Ile	Ala	Asn	Ile	Ala	Phe	Ala	Pro	Asn	Leu	Gly	Arg		
	65					70			75					80			
ttg	atc	att	cat	cgc	gac	acc	gac	cag	ggc	gtc	tac	gac	gcc	atg	aac	288	
Leu	Ile	Ile	His	Arg	Asp	Thr	Asp	Gln	Gly	Val	Tyr	Asp	Ala	Met	Asn		
	85					90			95								
cgc	ggc	gtg	gac	ctg	gcc	acc	gga	acg	tgg	ttg	ctc	ttt	ctg	ggc	gct	336	
Arg	Gly	Val	Asp	Leu	Ala	Thr	Gly	Thr	Trp	Leu	Leu	Phe	Leu	Gly	Ala		
	100					105			110								
gac	gac	agc	ctg	tac	gag	gct	gac	acc	ctg	gcg	cg	gtg	gcc	gcc	ttc	384	
Asp	Asp	Ser	Leu	Tyr	Glu	Ala	Asp	Thr	Leu	Ala	Arg	Val	Ala	Ala	Phe		
	115					120			125								
att	ggc	gaa	cac	gag	ccc	agc	gat	ctg	gta	tat	ggc	gac	gtg	atc	atg	432	
Ile	Gly	Glu	His	Glu	Pro	Ser	Asp	Leu	Val	Tyr	Gly	Asp	Val	Ile	Met		
	130					135			140								
cgc	tca	acc	aat	ttc	cgc	tgg	ggt	ggc	gcc	ttc	gac	ctc	gac	cgt	ctg	480	
Arg	Ser	Thr	Asn	Phe	Arg	Trp	Gly	Gly	Ala	Phe	Asp	Leu	Asp	Arg	Leu		
	145					150			155					160			
ttg	tcc	aag	cgc	aac	atc	tgc	cat	cag	gcg	atc	ttc	tac	cgc	cgc	gga	528	
Leu	Phe	Lys	Arg	Asn	Ile	Cys	His	Gln	Ala	Ile	Phe	Tyr	Arg	Arg	Gly		
	165					170			175								
ctc	tcc	ggc	acc	atc	ggt	ccc	tac	aac	ctc	cgc	tac	cg	gtc	ctg	gcc	576	
Leu	Phe	Gly	Thr	Ile	Gly	Pro	Tyr	Asn	Leu	Arg	Tyr	Arg	Val	Leu	Ala		
	180					185			190								
gac	tgg	gac	ttc	aat	att	cgc	tgc	ttt	tcc	aac	cca	gcg	ctc	gtc	acc	624	
Asp	Trp	Asp	Phe	Asn	Ile	Arg	Cys	Phe	Ser	Asn	Pro	Ala	Leu	Val	Thr		
	195					200			205								

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Arg Tyr Met His Val Val Ala Ser Tyr Asn Glu Phe Gly Gly Leu	
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agc aat acg atc gtc gac aag gag ttt ttg aag cgg ctg ccg atg tcc	720
Ser Asn Thr Ile Val Asp Lys Glu Phe Leu Lys Arg Leu Pro Met Ser	
225 230 235 240	
acg aga ctc ggc ata agg ctg gtc ata gtt ctg gtg cgc agg tgg cca	768
Thr Arg Leu Gly Ile Arg Leu Val Ile Val Leu Val Arg Arg Trp Pro	
245 250 255	
aag gtg atc agc agg gcc atg gta atg cgc acc gtc att tct tgg cgg	816
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Asn Val Ala Ala Val Leu Pro Ala Cys Leu Asp Ser Ile Ala Arg Gln	
35 40 45	
Thr Cys Gly Asp Phe Glu Leu Val Leu Val Asp Gly Gly Ser Thr Asp	
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Glu Thr Leu Asp Ile Ala Asn Ile Phe Ala Pro Asn Leu Gly Glu Arg	
65 70 75 80	
Leu Ile Ile His Arg Asp Thr Asp Gln Gly Val Tyr Asp Ala Met Asn	
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Arg Gly Val Asp Leu Ala Thr Gly Thr Trp Leu Leu Phe Leu Gly Ala	
100 105 110	
Asp Asp Ser Leu Tyr Glu Ala Asp Thr Leu Ala Arg Val Ala Ala Phe	
115 120 125	
Ile Gly Glu His Glu Pro Ser Asp Leu Val Tyr Gly Asp Val Ile Met	
130 135 140	
Arg Ser Thr Asn Phe Arg Trp Gly Gly Ala Phe Asp Leu Asp Arg Leu	
145 150 155 160	
Leu Phe Lys Arg Asn Ile Cys His Gln Ala Ile Phe Tyr Arg Arg Gly	
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Leu Phe Gly Thr Ile Gly Pro Tyr Asn Leu Arg Tyr Arg Val Leu Ala
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Asp Trp Asp Phe Asn Ile Arg Cys Phe Ser Asn Pro Ala Leu Val Thr
 195 200 205

Arg Tyr Met His Val Val Ala Ser Tyr Asn Glu Phe Gly Gly Leu
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Ser Asn Thr Ile Val Asp Lys Glu Phe Leu Lys Arg Leu Pro Met Ser
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Thr Arg Leu Gly Ile Arg Leu Val Ile Val Leu Val Arg Arg Trp Pro
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24